Targeted Wildlife Techniques: Wild Turkey

David Moscicki, Turkey Program Coordinator
Private Lands Leadership Academy– June 2025

Background

- AR Turkey Program Coordinator
  - April 2024 – Present

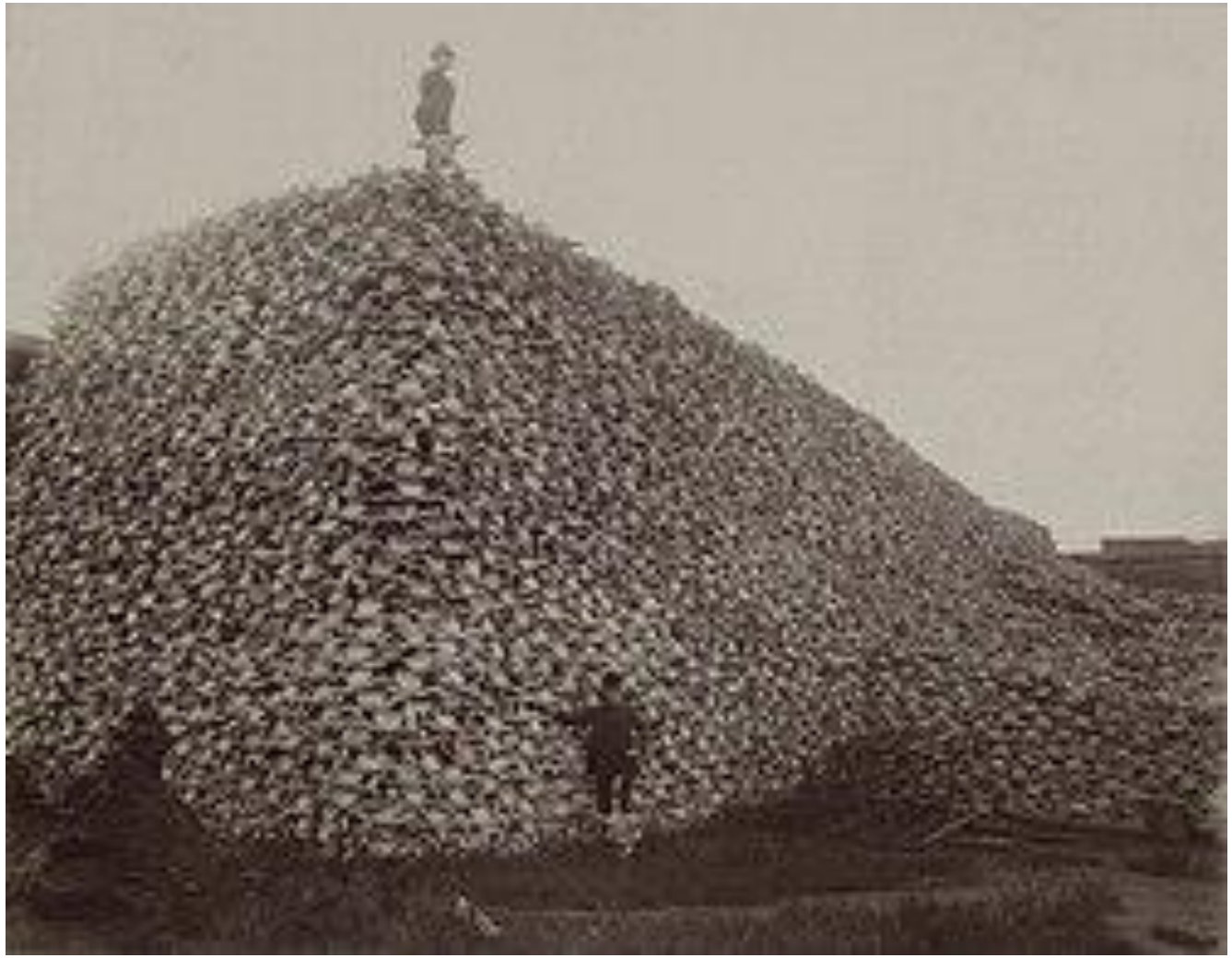
- Ph.D. Fisheries, Wildlife, and Conservation Biology 2024
  - North Carolina State University– Raleigh, NC

- M.S. Renewable Natural Resources 2020
  - Louisiana State University– Baton Rouge, LA

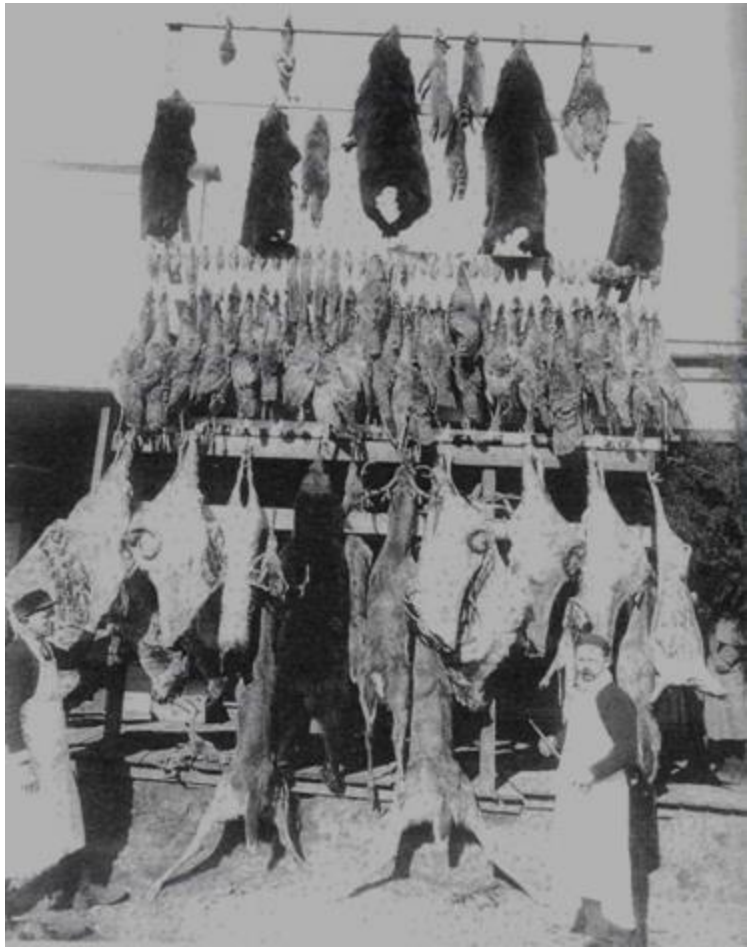
- B.S. Fisheries and Wildlife Ecology 2015
  - University of Nebraska-Lincoln– Lincoln, NE

Pre-Conservation

- 1938: 500 Deer
- 1940’s: 7,000 Turkeys
- 1950’s: 40-50 Bears
- Red wolves, Mountain lion, Bison, Elk: Extirpated



History

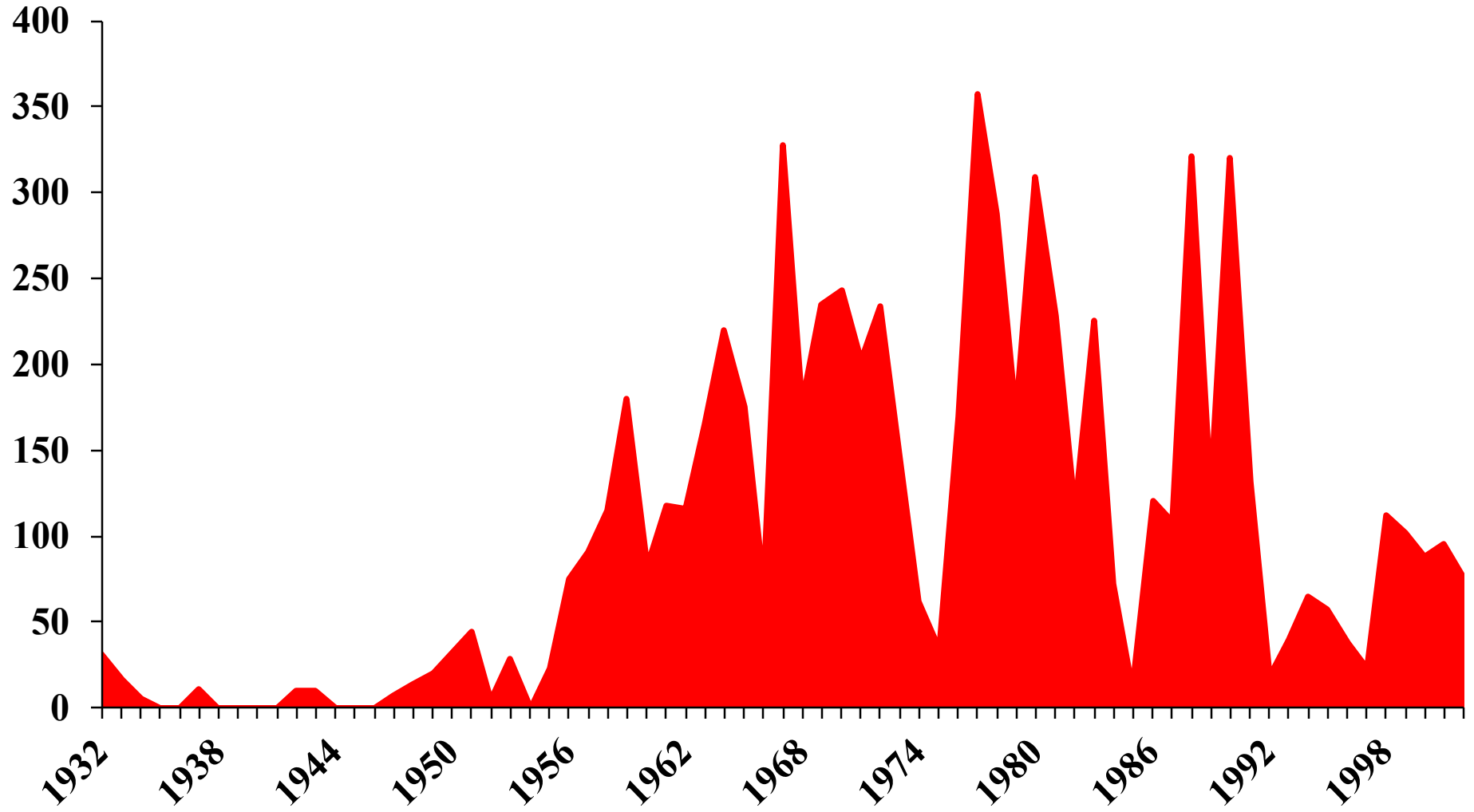


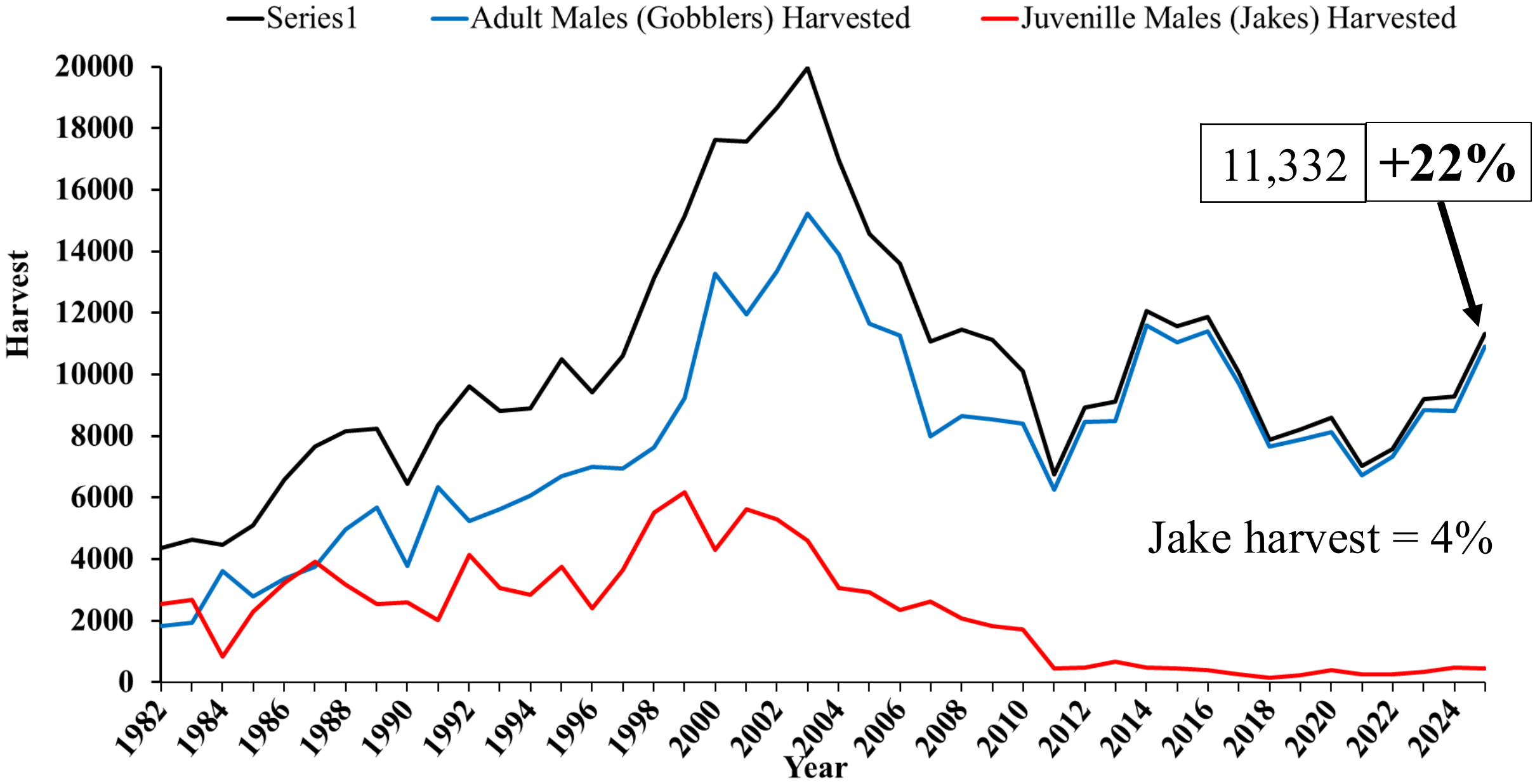
- Historical records indicate turkeys were abundant in Arkansas during pre-settlement times.
- Due to habitat loss and unregulated hunting, less than 7,000 turkeys were estimated to remain in the state in the mid-1940's. Most of these turkeys were primarily located near what is now Bull Shoals Lake, the Gulf Coastal Plain, and along the Mississippi River.
- Attempts to restore wild turkeys began in the 1920's using pen-reared turkeys, which was highly unsuccessful.

Restoration

- 1940's: cannon netting techniques were perfected for capturing wild turkeys, which began a new era for restoration efforts.
- Over 7,000 turkeys have been trapped and released in Arkansas.
- Early turkey trapping sites included: Shumaker Military Installation, Brandywine Island, White River NWR, St. Francis Forest, and other areas along the Mississippi River.
- Currently, we estimate wild turkey population at >113,000, and harvest ~7,000-11,000 turkeys annually.

Turkeys Stocked in Arkansas 1932-2002.




Series1
Adult Males (Gobblers) Harvested
Juvenille Males (Jakes) Harvested
Harvest
20000
18000
16000
14000
12000
10000
8000
6000
4000
2000
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1982
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1986
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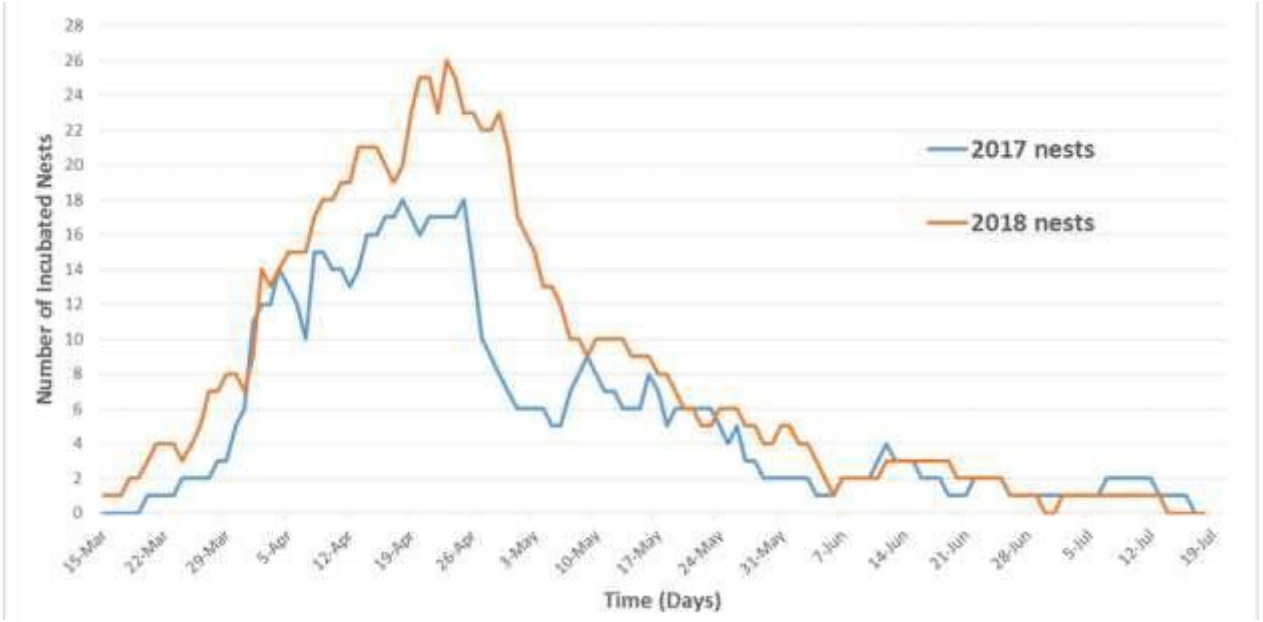
2016
2018
2020
2022
2024
Year
11,332
+22%
Jake harvest = 4%

Wild Turkey 101

- Largest Galliform in North America
- Require diverse habitats – annual cycle
- Exploded lek mating system – polygynous
- Require early successional plant communities
- Primary means of survival - vision

Tough being a turkey

- 28 days of nesting
- ~14 days of brood rearing
- Most nests fail (~20% success)
- Most broods fail (<40% success)



Mortality Factors

Direct Mortality

Predators: bobcat, coyote, great-horned owl, humans, dogs
Disease: avian pox, histomoniasis (blackhead), LPDV

Nesting

Predators: raccoon, snakes, skunk, opossum, coyote, fox
Other: floods, disturbance

Brooding

Poults: Snakes, bobcat, coyote, fox, owls, hawks, feral cats, dogs
Other: cold rainy weather when young

Winter

Flock types.

1) Adult Gobblers

2) Juvenile Gobblers (separate from hens in mid – late winter.

3) Successful Hens and Young

4) Unsuccessful Hens

Prefer forested habitats, to find soft and hard mast, but will use openings.

Home ranges vary depending on food availability.

Winter Foods

Hard mast
- Acorns
- Pecans
- Pine seed

Soft mast
- Dogwood
- Grape
- Wild cherry
- Black gum
- French mulberry
- American Beautyberry
- Greenbrier
- Poison ivy

Seeds
- Sedges
- Tick Trefoils
- Grain Crops
- Chufa

Green Forages
- Ladino clover
- Winter wheat
- Rye
- Ryegrass
- Ferns
- Misc. Grasses

Spring

Behaviors primarily triggered by day-length.

Flocks begin to break-up.

Turkeys move from winter range to breeding areas. These distances generally average 1-3 miles.

Gobblers begin to establish dominance, late winter/early spring.

After breeding, generally laying 1 egg/day until the clutch is complete (10-12 eggs).

Hen incubation (~26-28 days), only briefly leaving the nest on occasion.

Spring Foods

Green forage

- Clovers
- Alfalfa
- Winter wheat
- Misc. grasses

Hard mast

- Acorns
- Maple
- Ash

Soft mast

- Wild strawberry
- Raspberry
- Dewberry

Insects & other animal matter

- Grasshoppers
- True bugs
- Beetles
- Leafhoppers
- Snails

Summer

Nesting activity begins to decrease, and is generally complete by the end of July.

Turkeys begin to associate with openings and edges,

Insects associated with openings are an important component of a poults diet (~75% of diet).

Poults begin flying at about 2 weeks of age and are roosting in trees by 4 weeks of age.

Summer Foods

Green Forage

- Clovers
- Alfalfa
- Misc. grasses

Grass/Seeds

- Wild millets
- Panicums
- Smartweed

Insects & Other Animal Matter

- Grasshoppers
- True bugs
- Beetles

Soft mast

- Blackberry
- Dewberry
- Huckleberry
- Wild cherry
- Pokeweed
- Mulberry

Fall

Turkeys begin to assemble into winter flocks

Disperse from summer range to winter range.

Forested areas become the primary habitat as turkeys search for mast.

Depending on food availability, daily range of turkeys can be large (> 1,000 acres).

Fall Foods

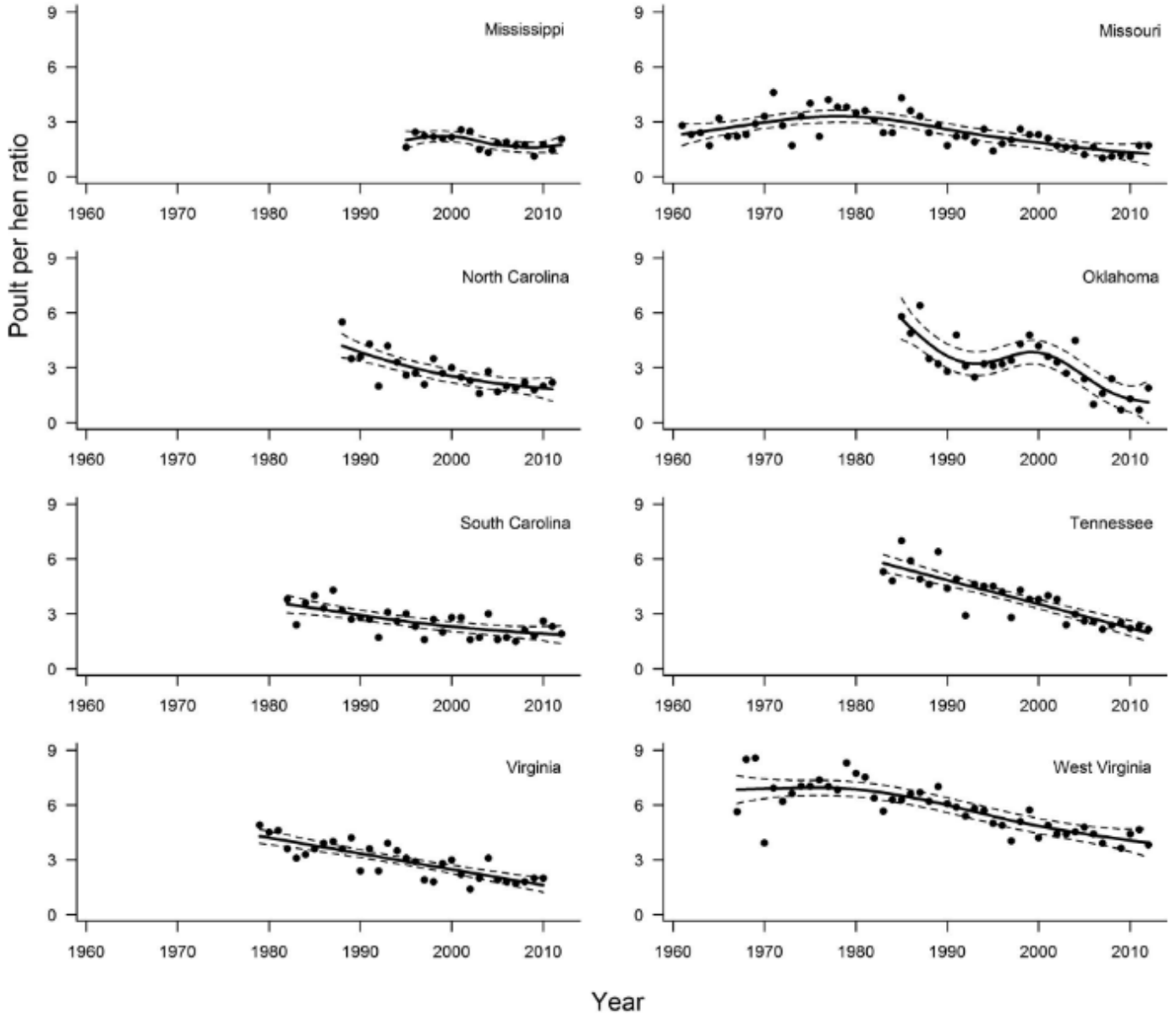
Hard mast
- Acorns
- Pecans
- Pine seed

Green Forage
- Clovers
- Alfalfa
- Misc. Grasses

Soft mast
- Dogwood
- Grape
- Wild cherry
- Black gum
- Greenbrier
- Autumn olive

Grass/Seeds
- Panicums
- Bahia
- Dallisgrass
- Tick trefoils
- Crab grass

Insects & other animal matter
- Walkingsticks
- Grasshoppers



Byrne, M. E., Chamberlain, M. J., & Collier, B. A. (2016). Potential density dependence in wild turkey productivity in the southeastern United States. National Wild Turkey Symposium, 11, 329–351.

Restoration to Management

What can we regulate

- Bag limits
- Season dates and lengths

What can we monitor

- Productivity
- Survival

What else can we control?

- Habitat improvements…
- Land acquisitions…

Restoration to Management

Bag limits:

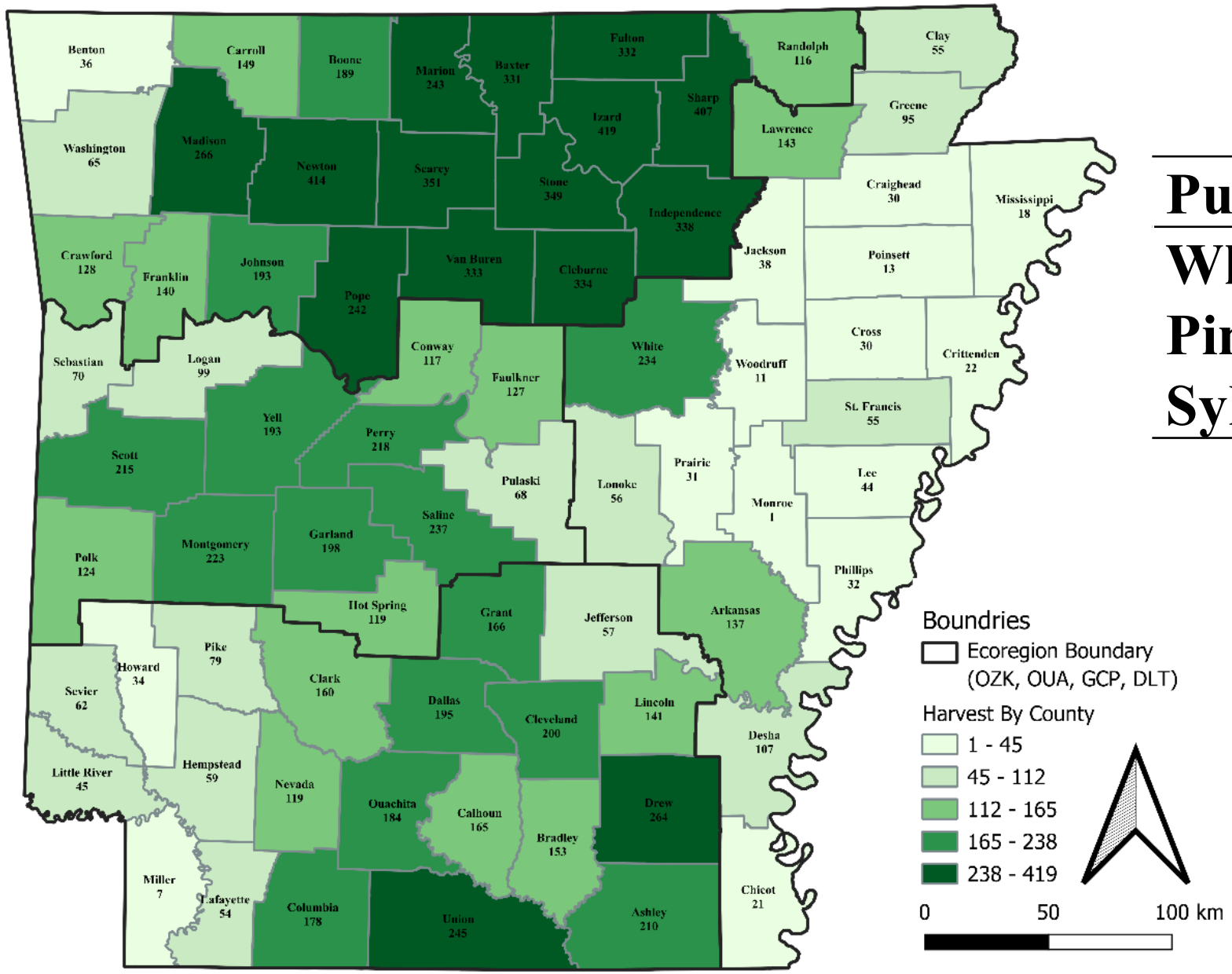
- Statewide 2 bird limit
  - No females
  - No jakes (except 1 for youths)
- Season dates and lengths
  - Youth weekend
  - 3rd Monday of April start date
  - 21 and 9 day season

Restoration to Management

Bag limits:

- Statewide 2 bird limit
  - No females
  - No jakes (except 1 for youths)
- Season dates and lengths
  - Youth weekend
  - 3rd Monday of April start date
  - 21 and 9 day season

- ~10% of hunters harvest a second bird
- Females drive the population
- Removal of Jakes diminishes next year adult numbers
- Youth weekend is 7 days earlier to allow for a rest period
- 3rd Monday aligns with peak nest initiation (Egg laying)
- 9 day season are for zones with low turkey populations.



Public Hunting Area	Total
White Rock WMA	169
Piney Creeks WMA	147
Sylamore WMA	121

County	Total
Izard	419
Newton	414
Sharp	407

Productivity Numbers

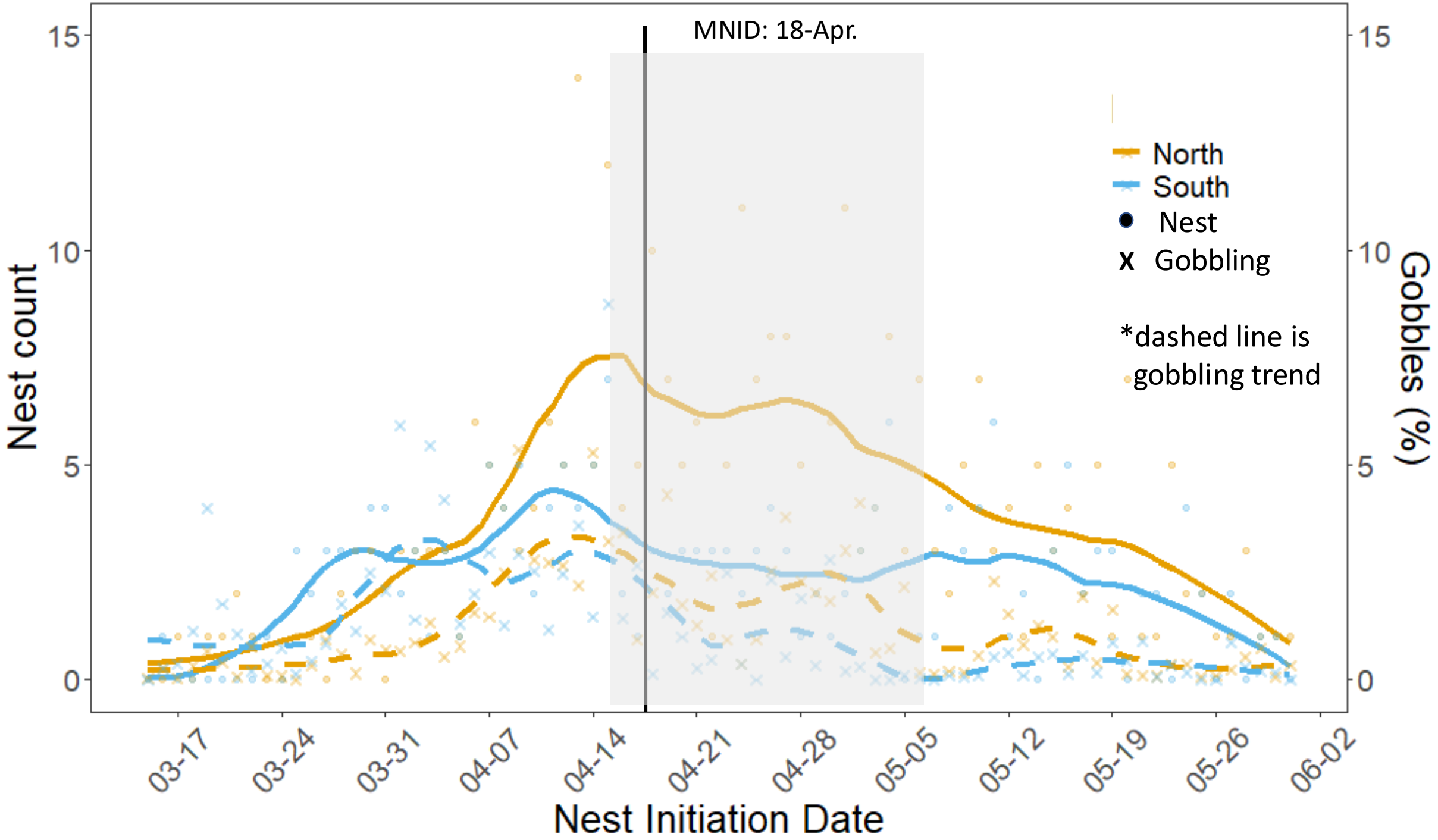
- Nesting effort: nest initiation & nest success –
  - Nest initiation rates refer to the percentage of hens that attempt to nest: averages around 70-90%.
  - Nest success rates refer to the percentage of nests that hatch: averages 20-30%.
- Combine nest initiation and nest success rates, you can get an idea of how many poults may be hatched into a population.

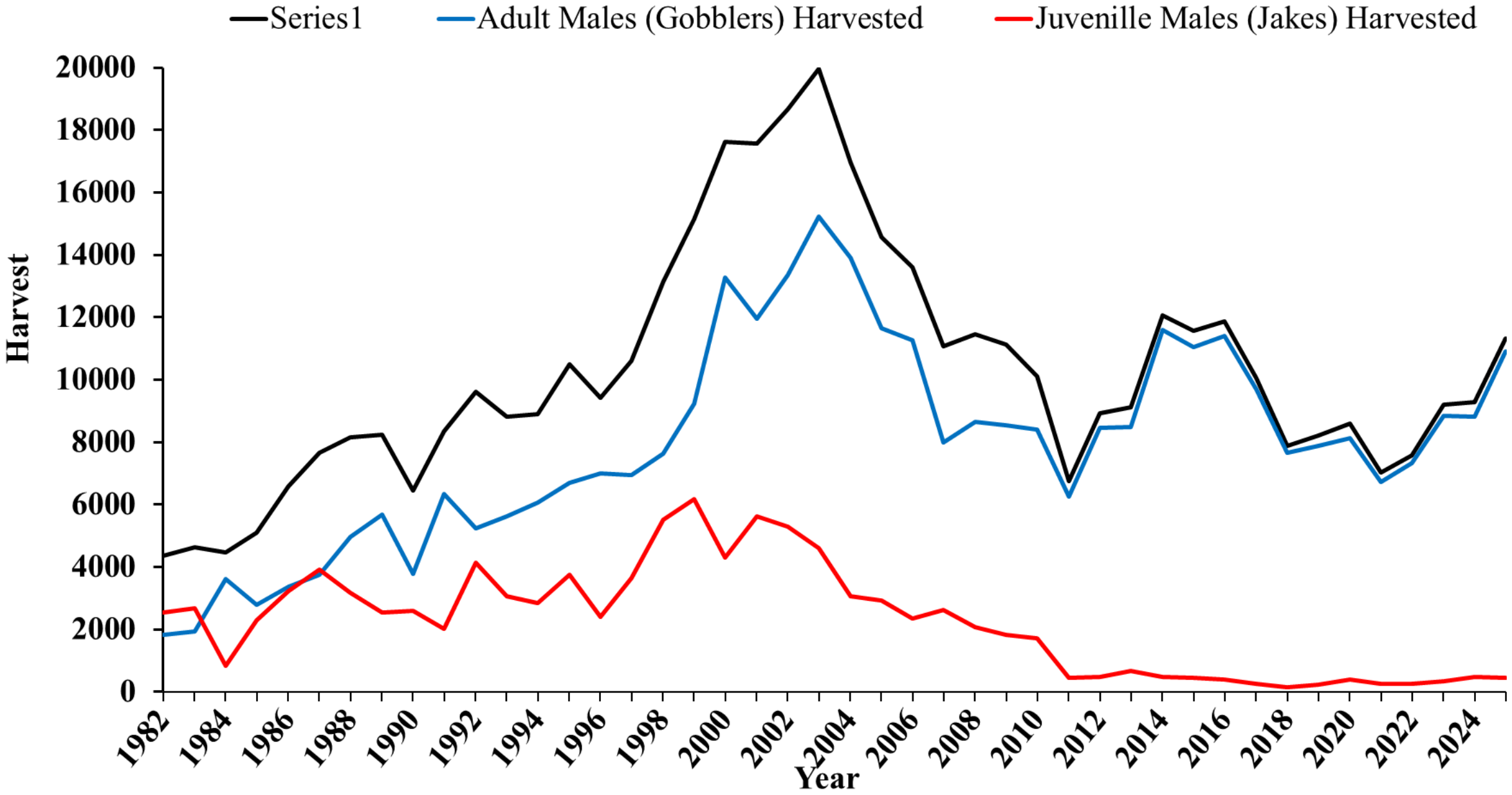
- Nest initiation date: April 18th
- Nest incubation initiation date: May 2nd
- Poults per hen ratios (PPH): 1.8 is a slow increasing population

Year	PPH
2019	1.13
2020	1.53
2021	1.50
2022	1.79
2023	1.75
2024	2.49

Setting of seasons

- Turkeys are the only bird in N. America that we harvest during breeding season
- Removal of dominant male prior to copulation delays reproduction
- Hormonal process' are not understood
- Nest initiation vs. incubation
- The general consensus is to have those dominant males breed prior to harvest


MNID: 18-Apr.
North
South
Nest
Gobbling
*dashed line is gobbling trend
Nest count
Gobbles (%)
Nest Initiation Date
15
10
5
0
03-17
03-24
03-31
04-07
04-14
04-21
04-28
05-05
05-12
05-19
05-26
06-02


Series1
Adult Males (Gobblers) Harvested
Juvenille Males (Jakes) Harvested
Harvest
20000
18000
16000
14000
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10000
8000
6000
4000
2000
0
1982
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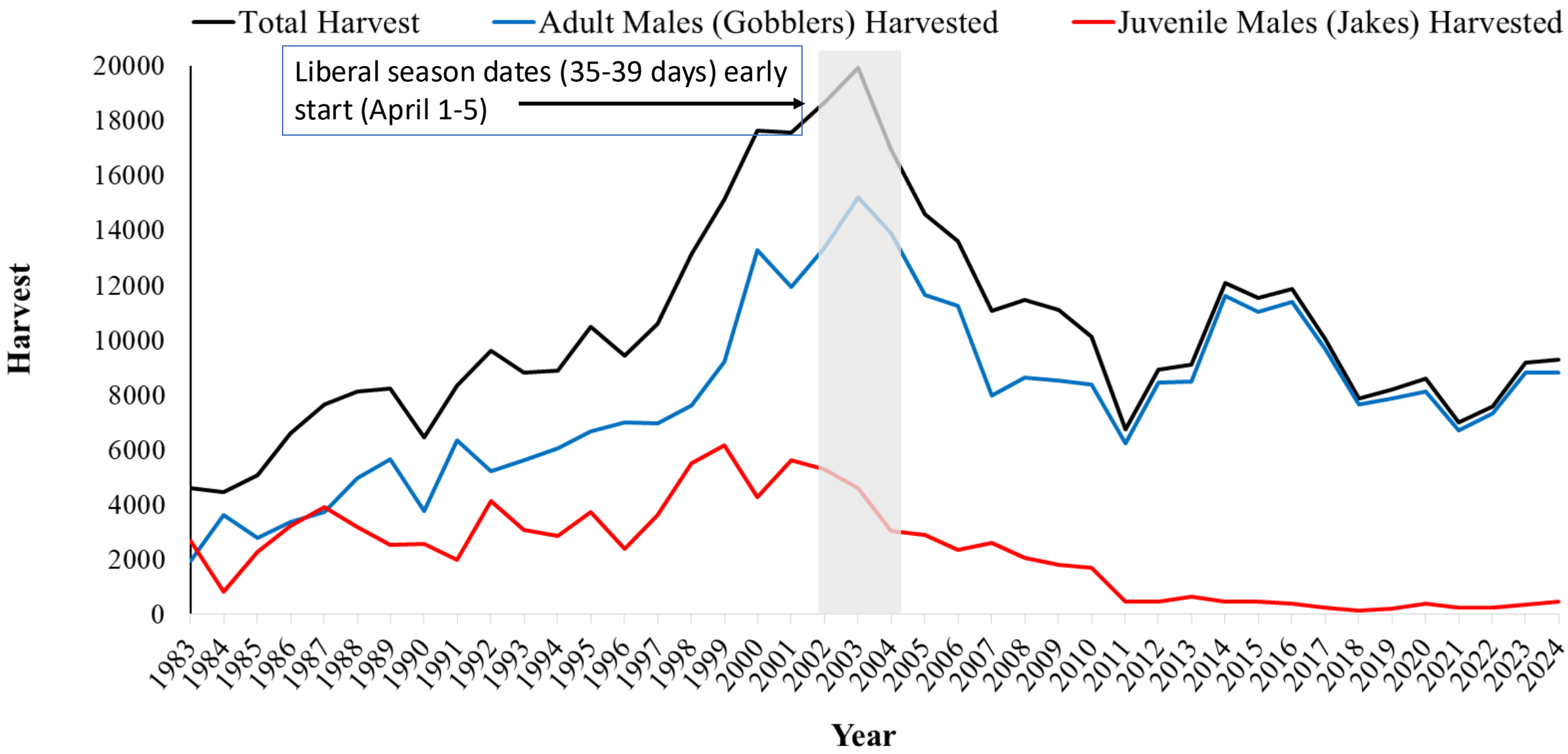
Year


Total Harvest
Adult Males (Gobblers) Harvested
Juvenile Males (Jakes) Harvested
Liberal season dates (35-39 days) early start (April 1-5)
Harvest
20000
18000
16000
14000
12000
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8000
6000
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2000
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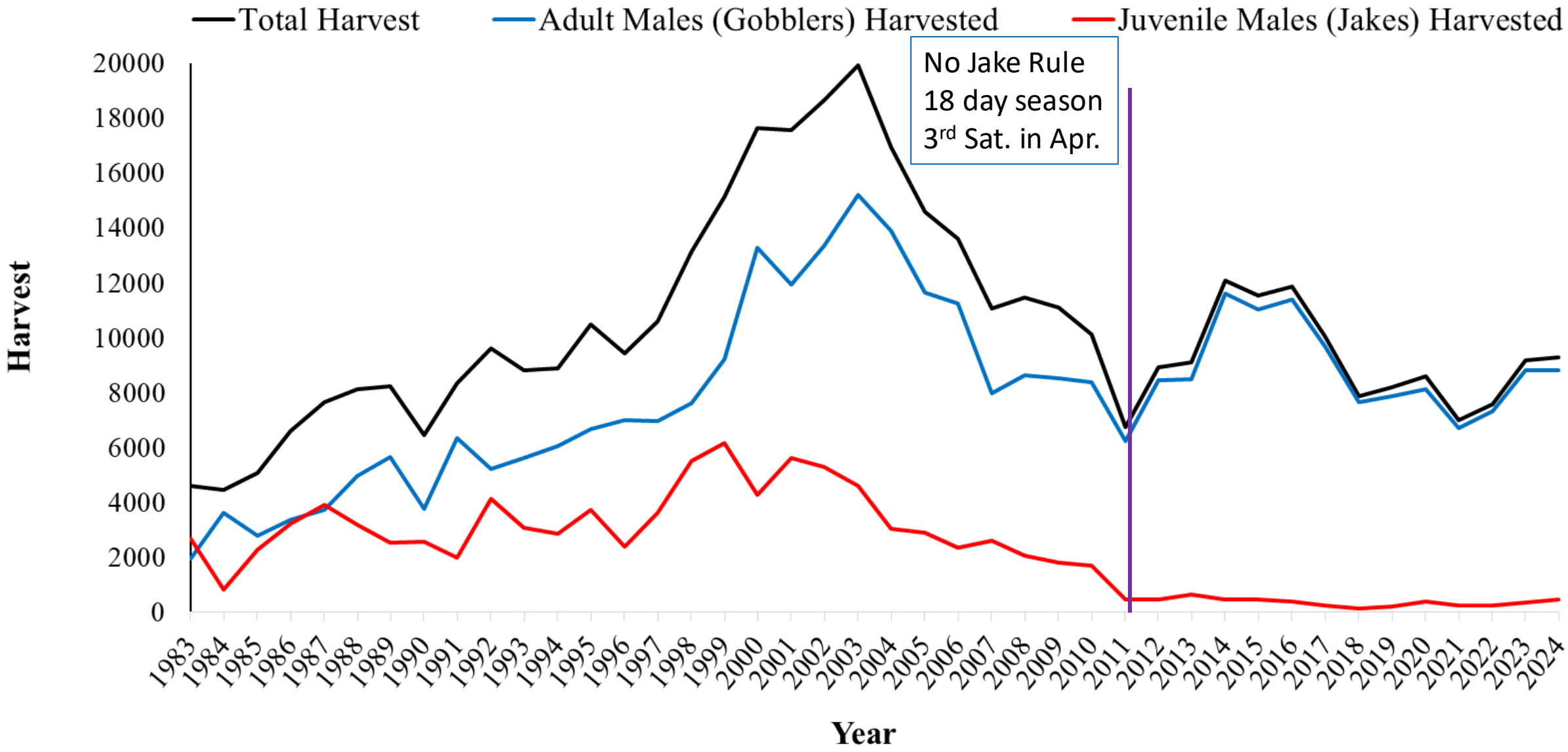
Year


Total Harvest
Adult Males (Gobblers) Harvested
Juvenile Males (Jakes) Harvested
No Jake Rule
18 day season
3rd Sat. in Apr.
Harvest
Year
20000
18000
16000
14000
12000
10000
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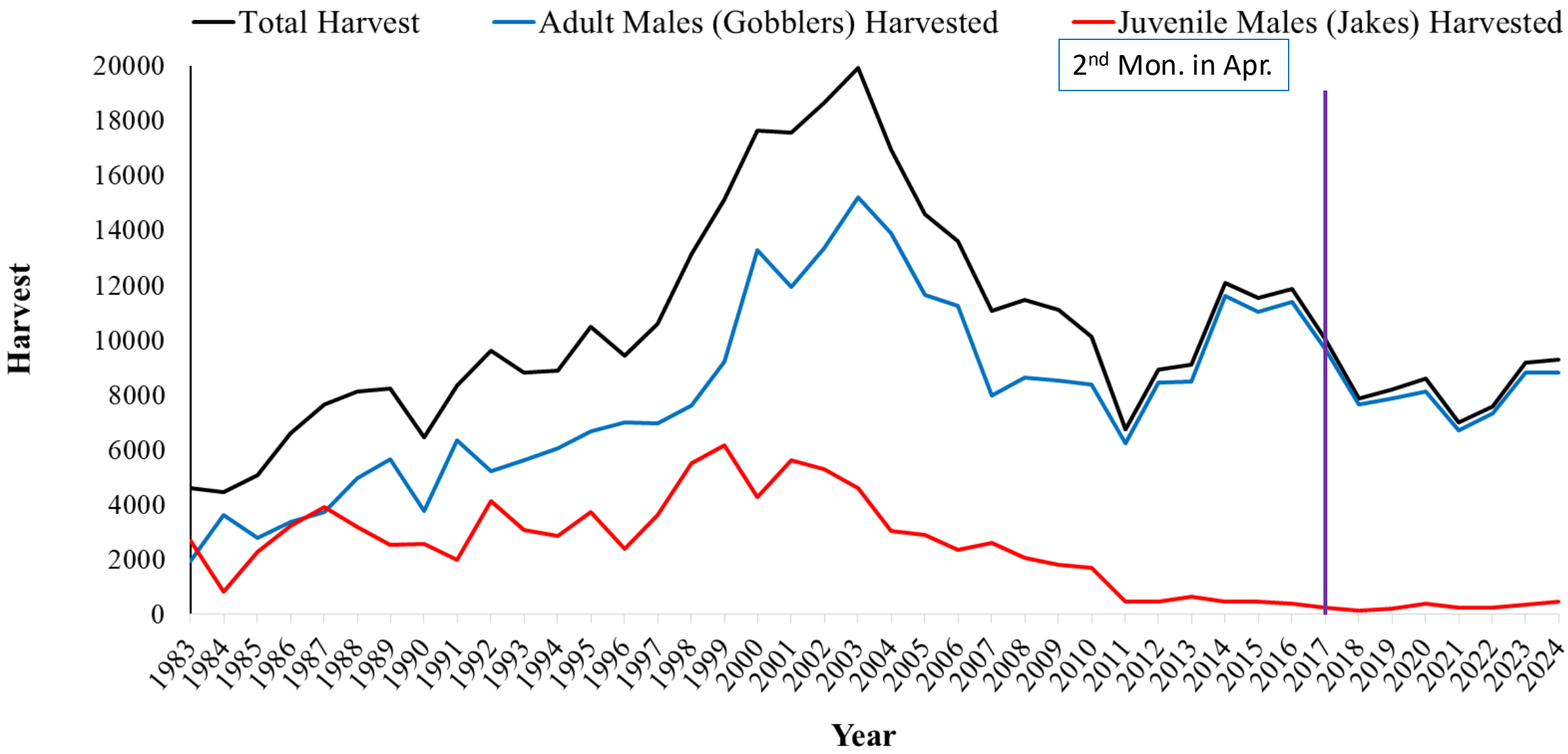
Total Harvest
Adult Males (Gobblers) Harvested
Juvenile Males (Jakes) Harvested
2nd Mon. in Apr.
Harvest
20000
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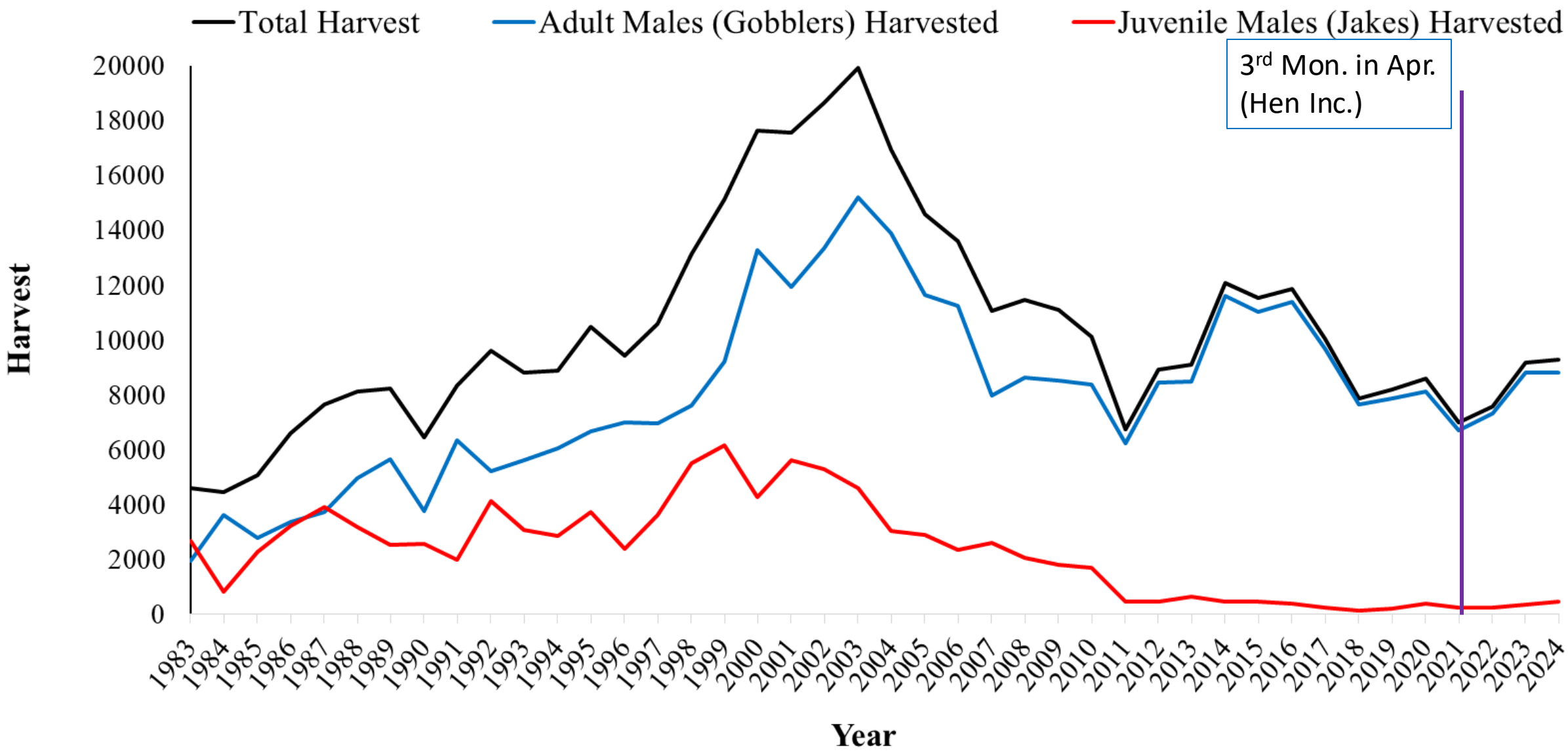
2024
Year


Total Harvest
Adult Males (Gobblers) Harvested
Juvenile Males (Jakes) Harvested
3rd Mon. in Apr. (Hen Inc.)
Harvest
Year
20000
18000
16000
14000
12000
10000
8000
6000
4000
2000
0
1983
1984
1985
1986
1987
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1989
1990
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2020
2021
2022
2023
2024

What is habitat?

What is habitat?

Its species specific:

1. Food & Water
2. Cover for all parts of life cycle
3. Roosting Substrate

What are turkeys?

A. *Generalist*: Species that can survive and reproduce in a wide variety of habitats and environmental conditions

B. *Specialist*: Species that have a narrow tolerance for environmental conditions and require specific habitats or resources to survive.

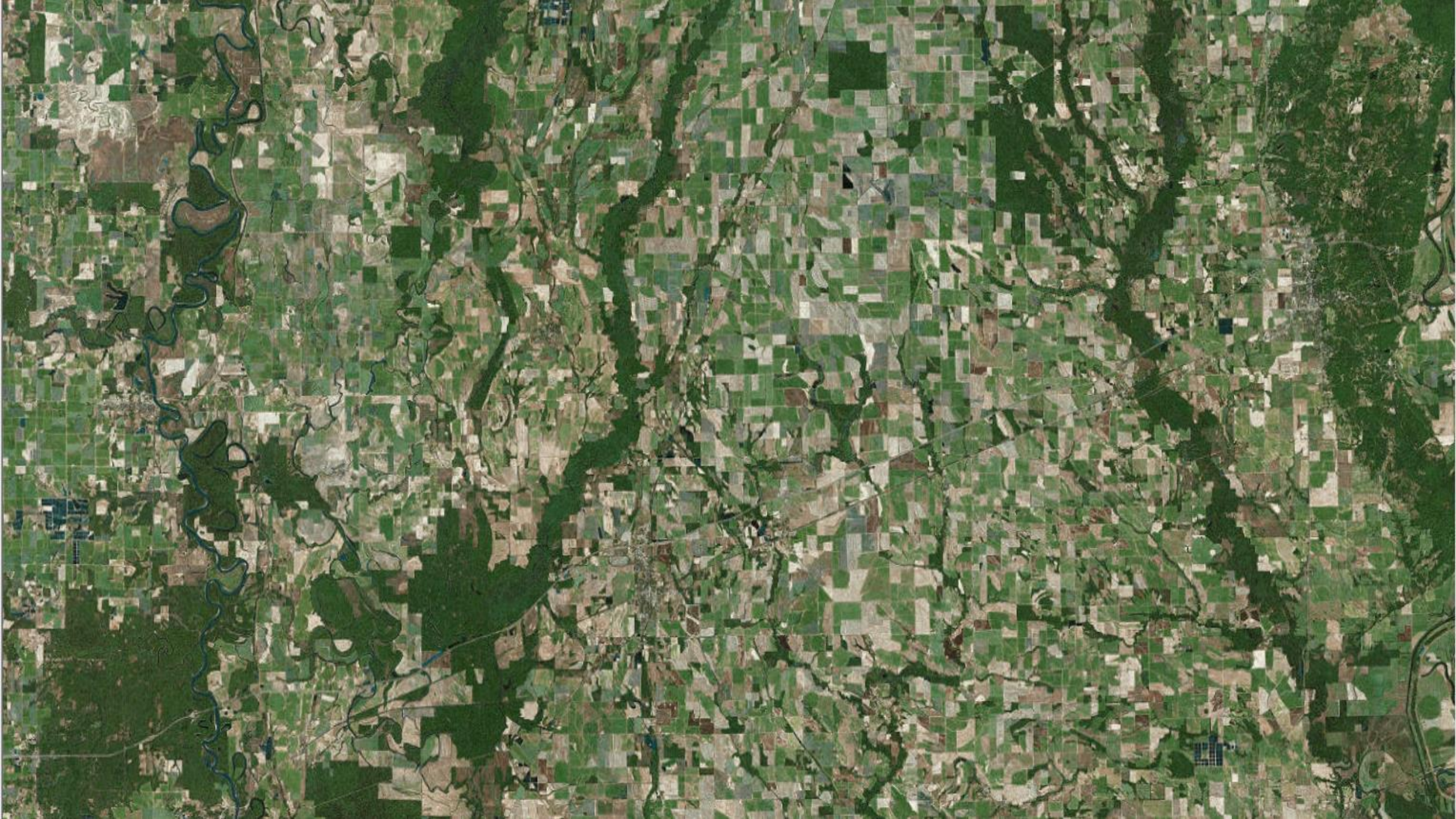
What's Ideal Turkey Habitat?

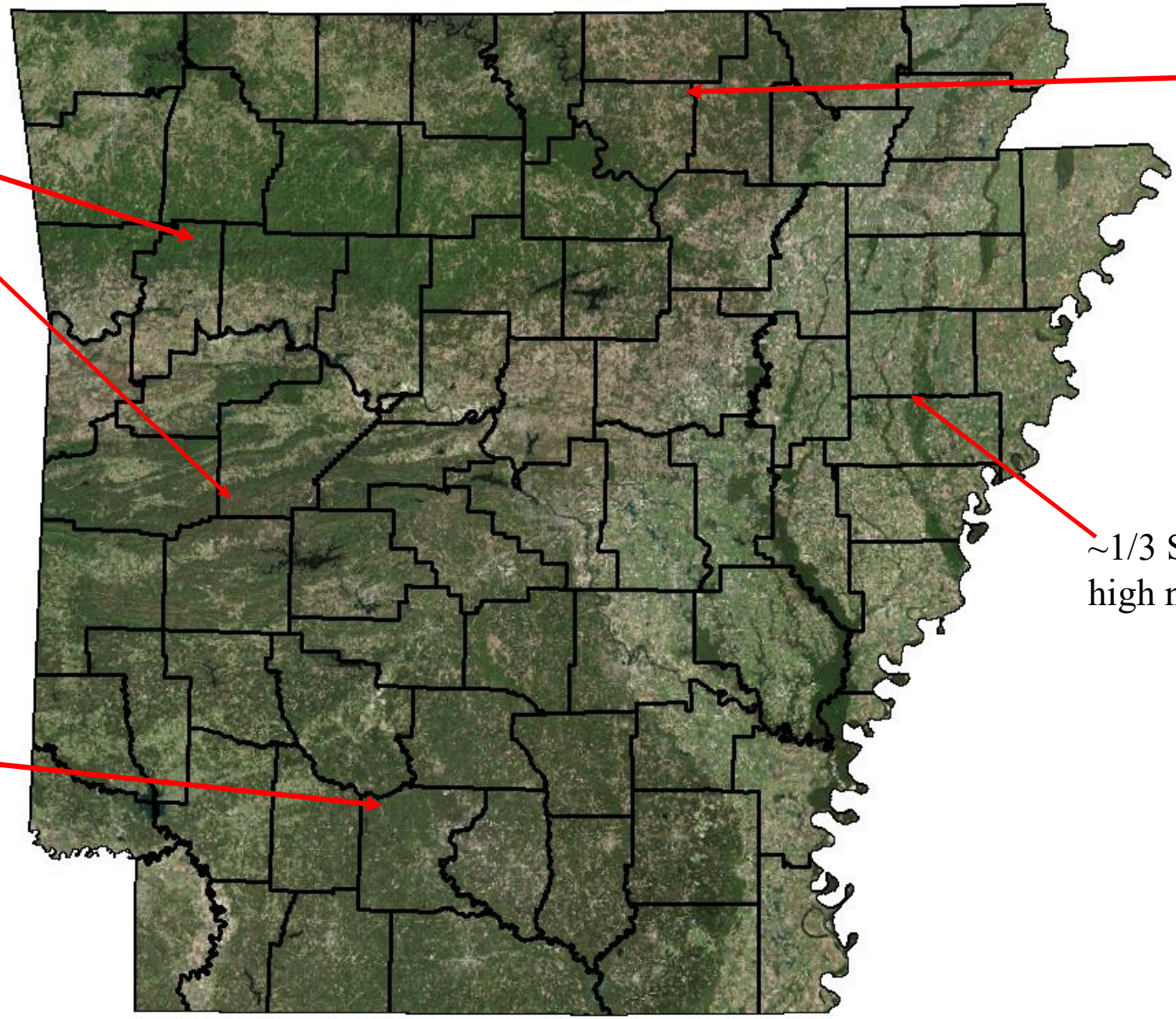
30-60% mature forest.

10-30% scattered pasture or other grassy openings.

10-20% old field or brushy habitat.

10-30% small grain crops.



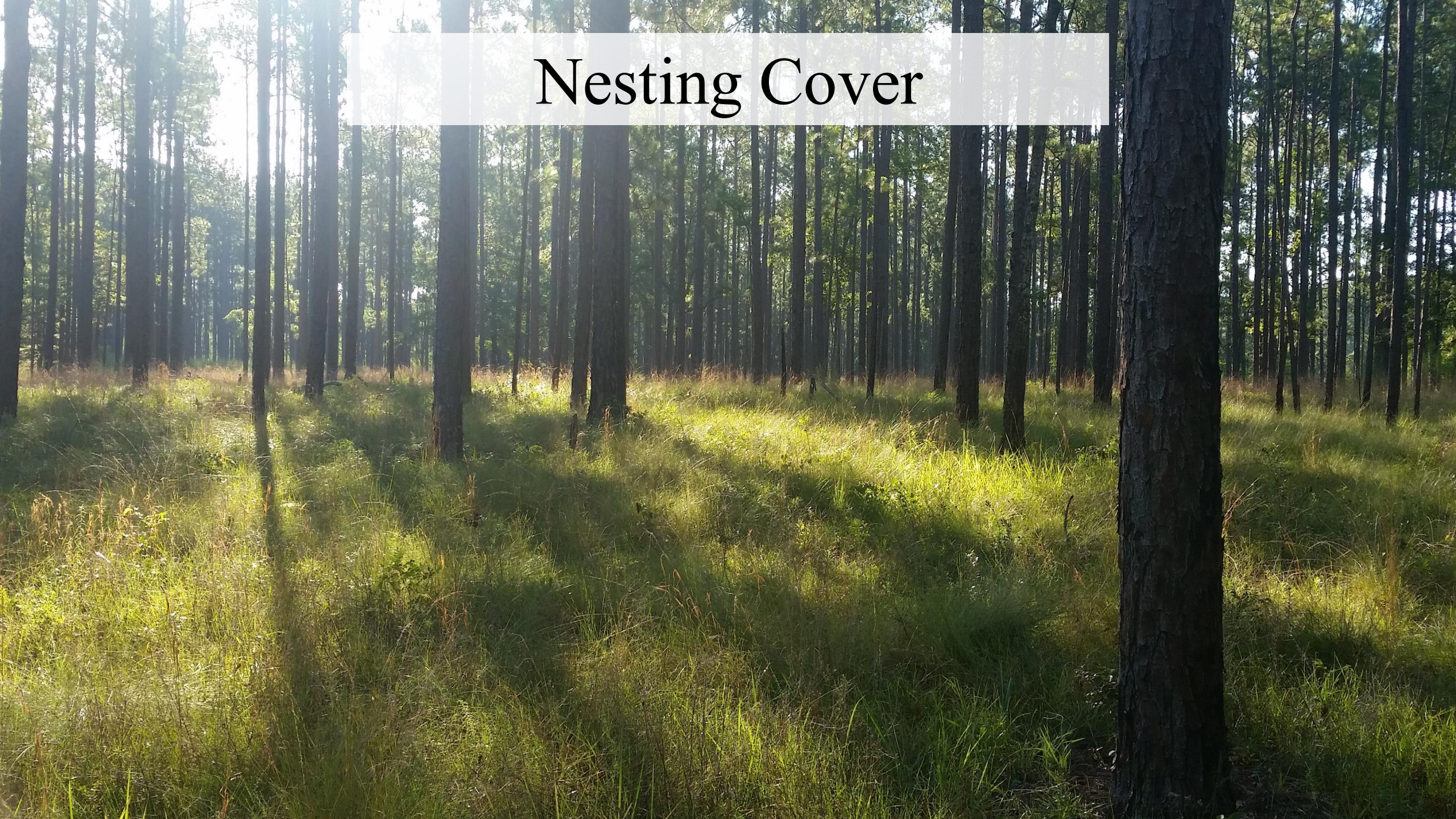


Large portion of public land is overstocked

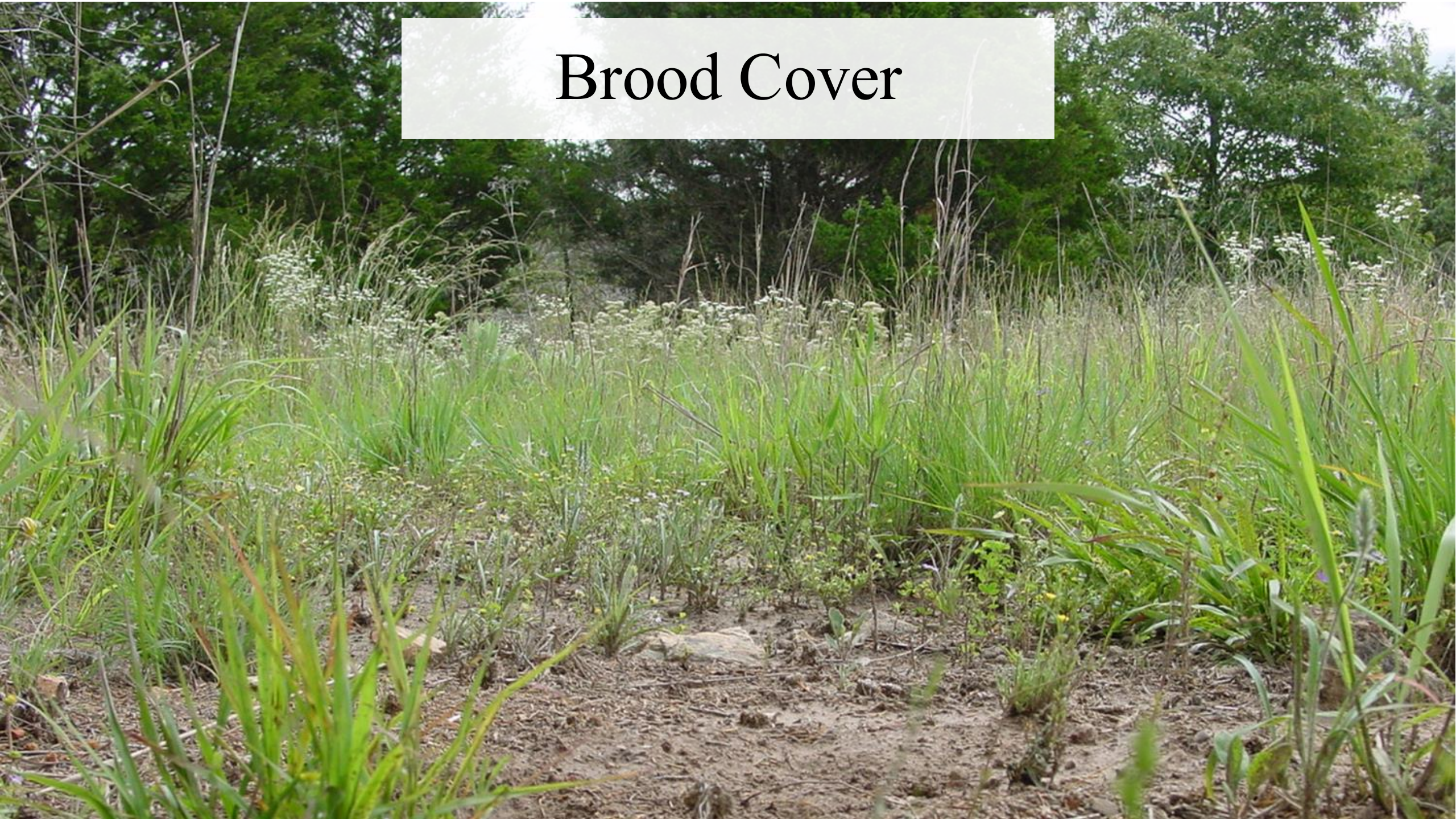
Top Counties for Harvest = > Diversity

~1/3 State won't support high numbers throughout

2nd Highest Harvest in State = Pines aren't that bad


Nesting Cover

Brood Cover

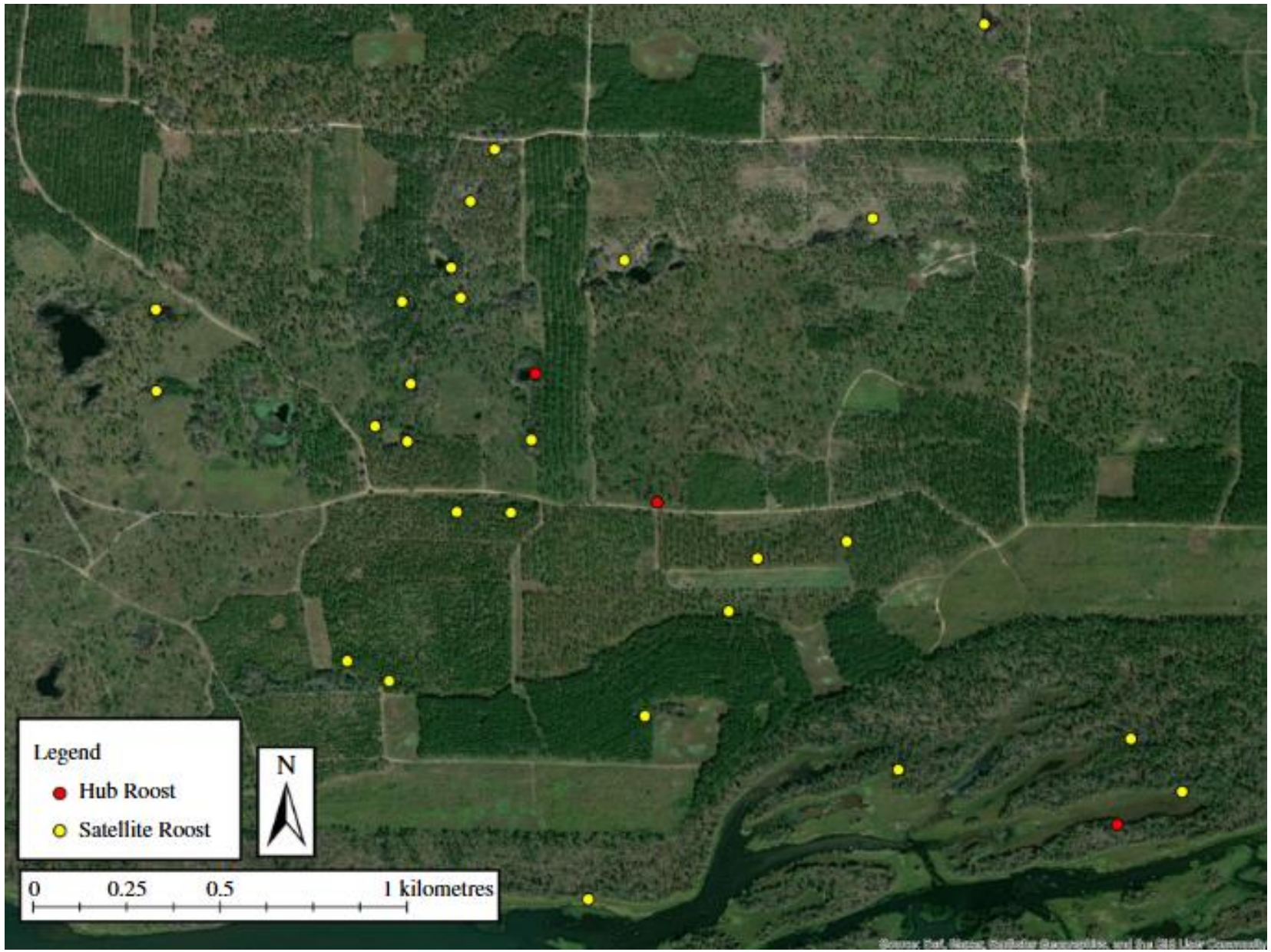


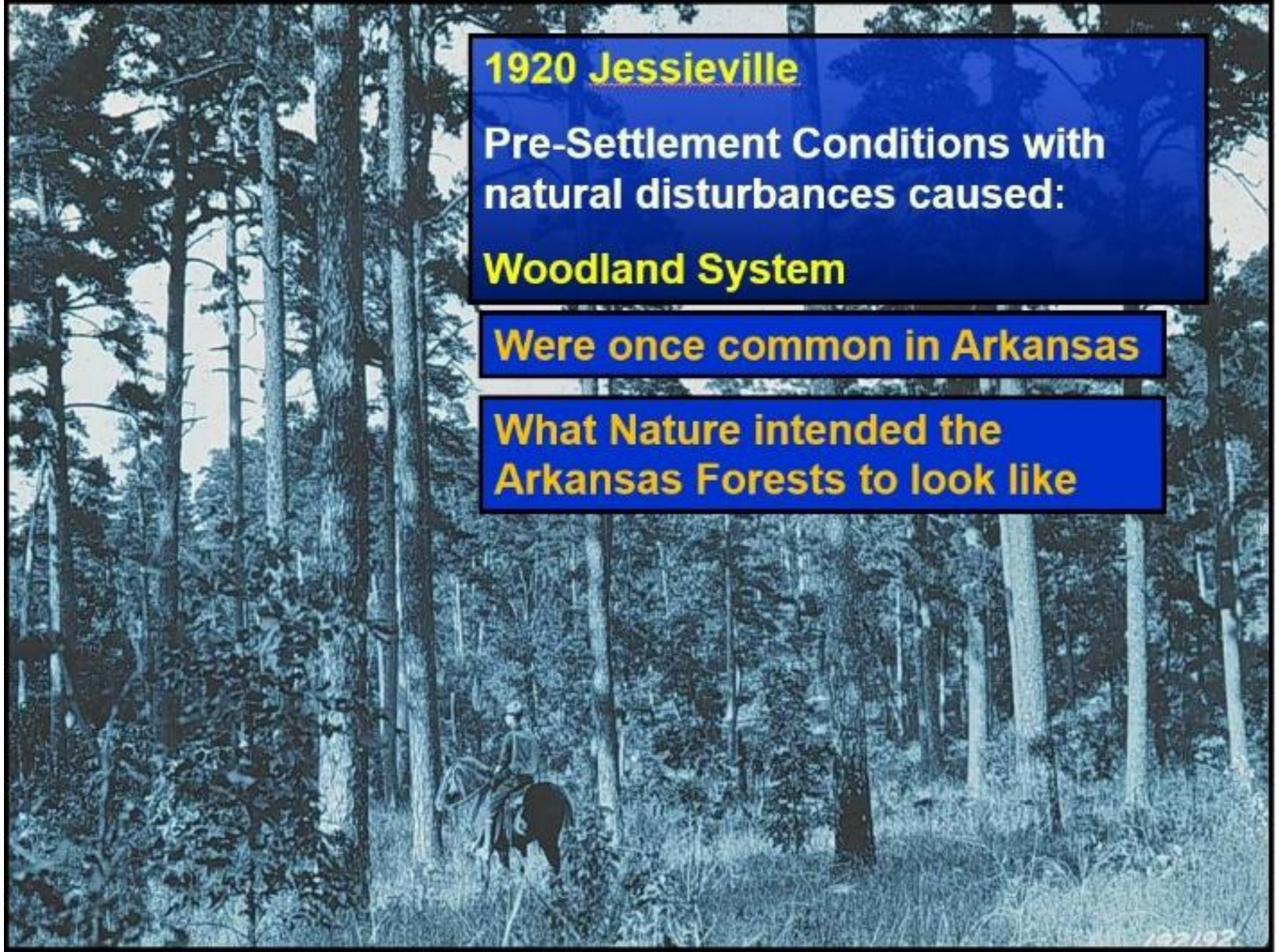
Roosting

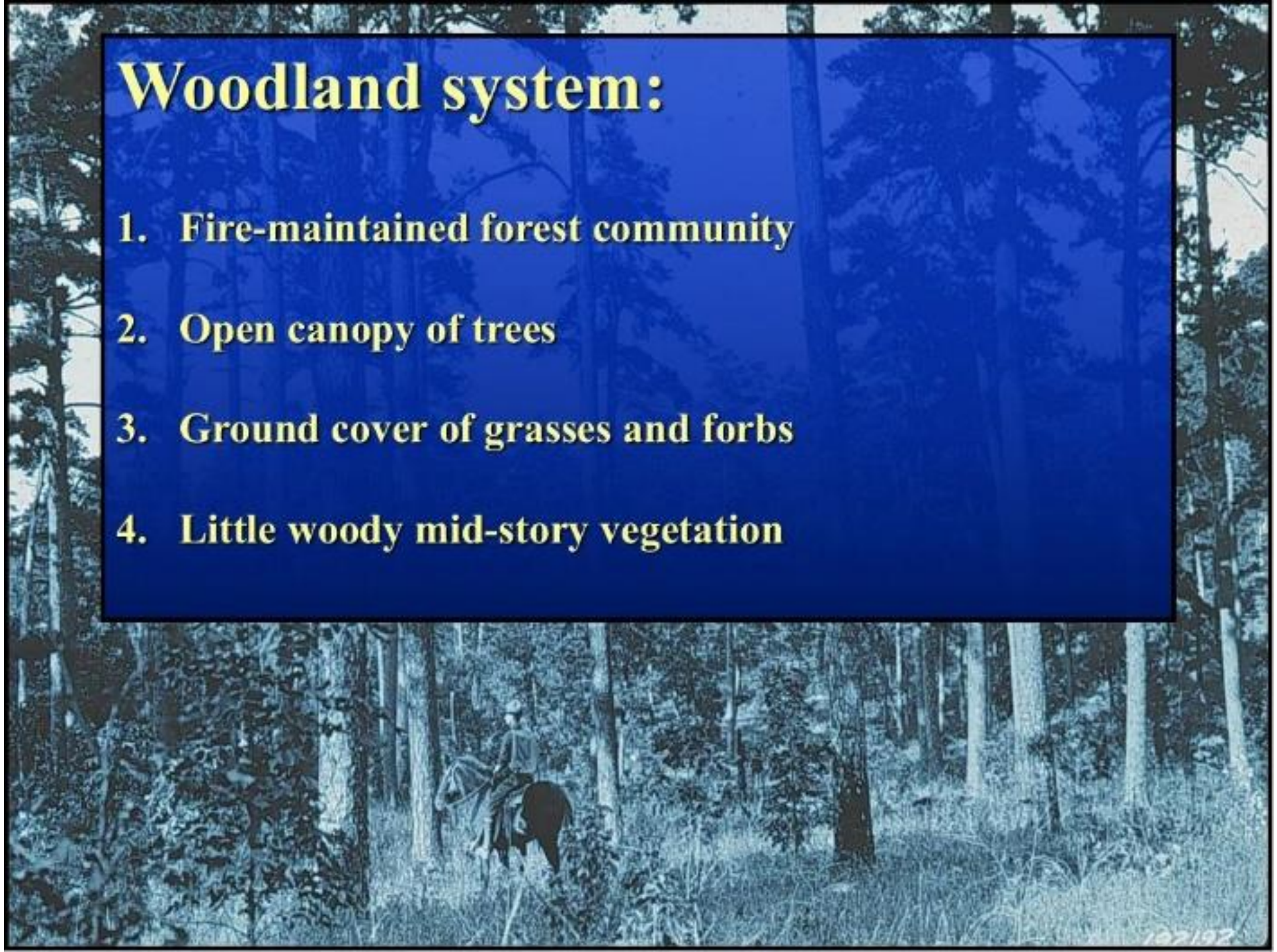
Hub roosts were situated closer to secondary roads

- provide quality foraging
- escape cover

low-intensity maintenance of roads promotes early successional vegetative communities.




1920 Jessieville
Pre-Settlement Conditions with natural disturbances caused:
Woodland System
Were once common in Arkansas
What Nature intended the Arkansas Forests to look like


Woodland system:
1. Fire-maintained forest community
2. Open canopy of trees
3. Ground cover of grasses and forbs
4. Little woody mid-story vegetation

How does fire affect turkeys?

- Direct nest and brood loss?
- Avoidance of burned stands?
- Movements and behavior?
- Scale?

Turkeys evolved with fire and disturbance

- 2-3 yr return interval widely reported to provide nesting and brood habitat – cover and ability to evade predators – select 0, 1, and 2 yr roughs

Habitat Management

Periodic Disturbance

- Forest must have periodic disturbance to be healthy!!
- Forest management is disturbance
- Have to cut or kill trees to manage the forest
  - Takes time

Treatment Types

1. Timber Thinning
   a)Reduce Basal Area
   b)Mechanical (Commercial Harvest, Mulching)
   c)Chemical (Herbicide Injection)
2. Opening Establishment
   a)Food Plots
   b)Native Grass/Fallow Fields
3. Herbicide Application
   a)Reduce woody species
   b)Set back succession
4. Prescribed Fire

Thinning

- Sunlight
- Forest benefits
  - Wildlife
  - Growth
  - Visibility

Prescribed Fire

- Removes excess fuel
- Reduces competition
- Understory dominated by grasses and forbs
- Short interval fires
    - Every 2-3 years

Tree Density

1. Burned pine stand with a basal area of 110 square feet per acre.

2. Burned pine stand with a basal area of 90 square feet per acre.

3. Burned pine stand with a basal area of 70 square feet per acre.

4. Burned pine stand with a basal area of 50 square feet per acre.

Management

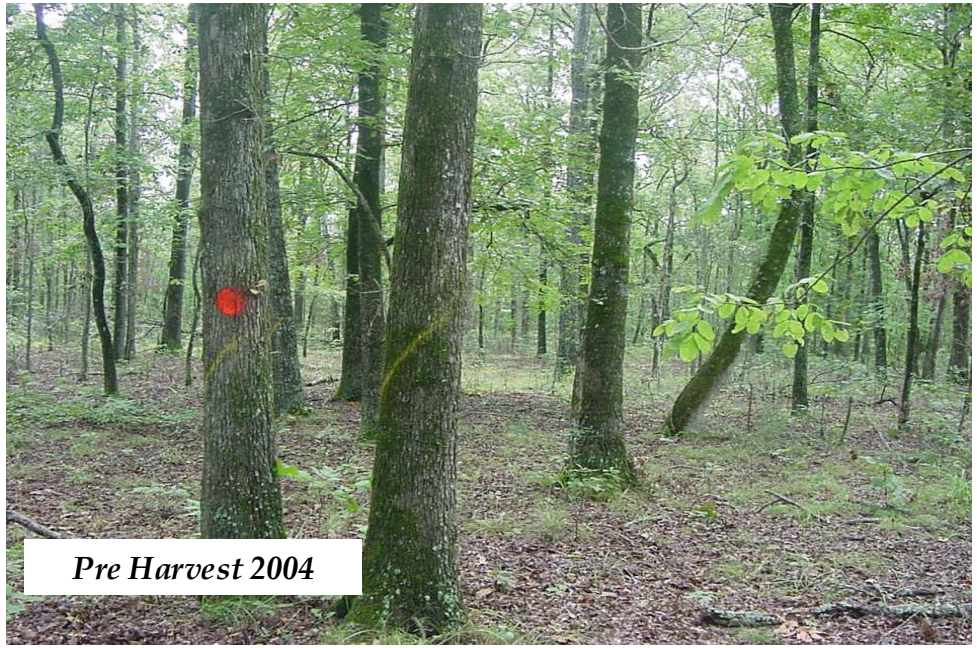
Prescribed Fire: Recommend 2-3 year rotation, and dividing property up in to compartments such that adjacent blocks are not burned during the same year to provide a range of habitats.

Creation of Openings: openings provide much needed brood habitat, feeding areas, and gobbler display areas and are a critical component of good turkey habitat, especially in areas that are primarily forested. Preferably openings should be long and linear as turkeys are reluctant to utilize portions of openings greater than 200 feet from cover.

Comparison

Thinned and Burned

Burned only



Pre Harvest 2004

Post Harvest 2004

Post Burn 2006

June 2007

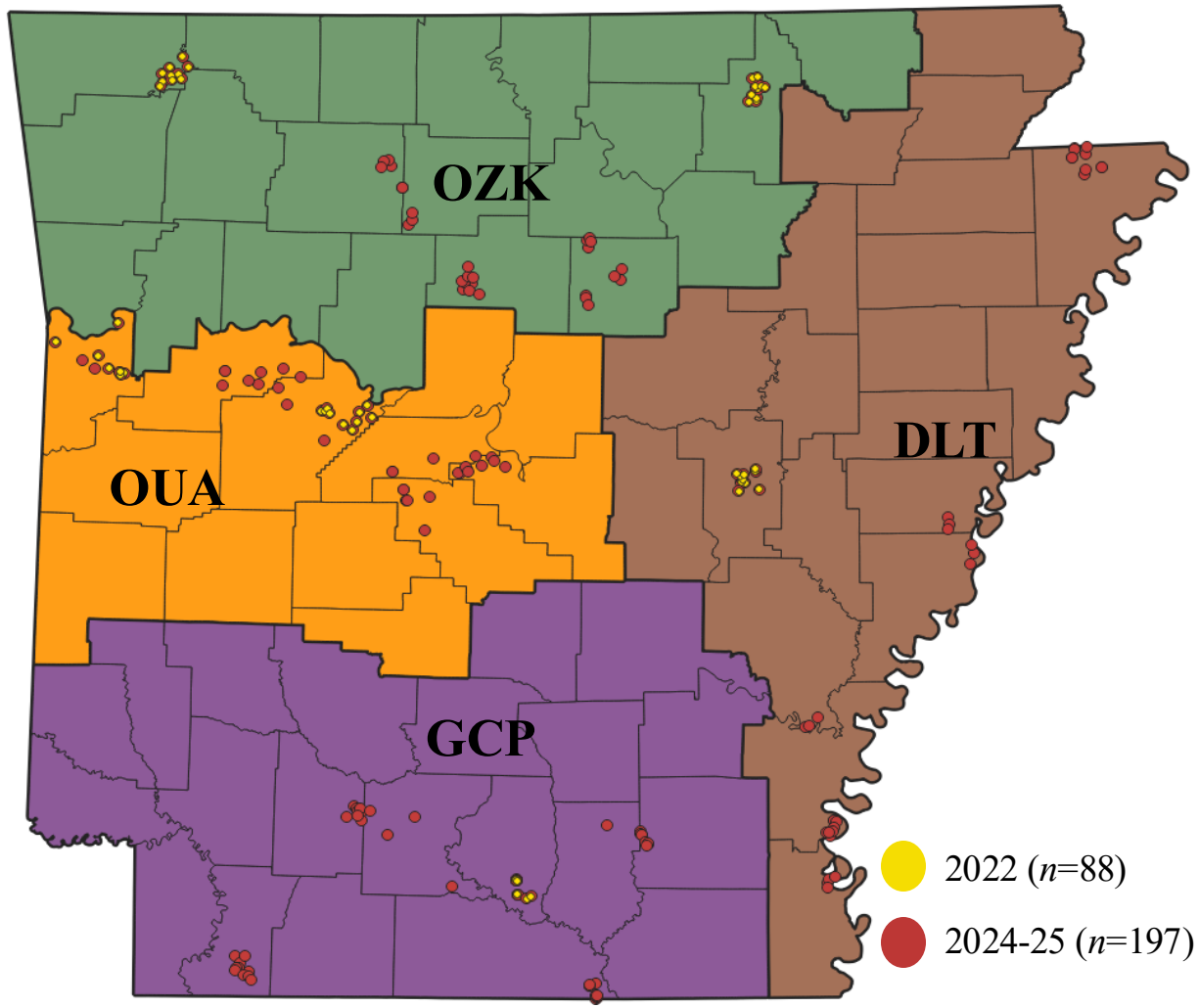
PUSH HABITAT IMPROVEMENT

1. Active forest mgt. & Forest health
2. Prescribed fire
3. Structural diversity in open lands
4. Improve survival and productivity

What else can be done?

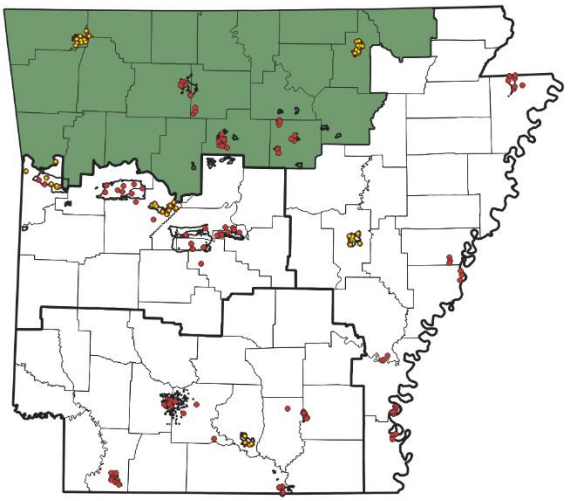
- Avoid using supplemental feed
  - Minimally March 1 – July 31
- Avoid cutting hay until July 15th
- Consider limiting harvest/access
- Trapping

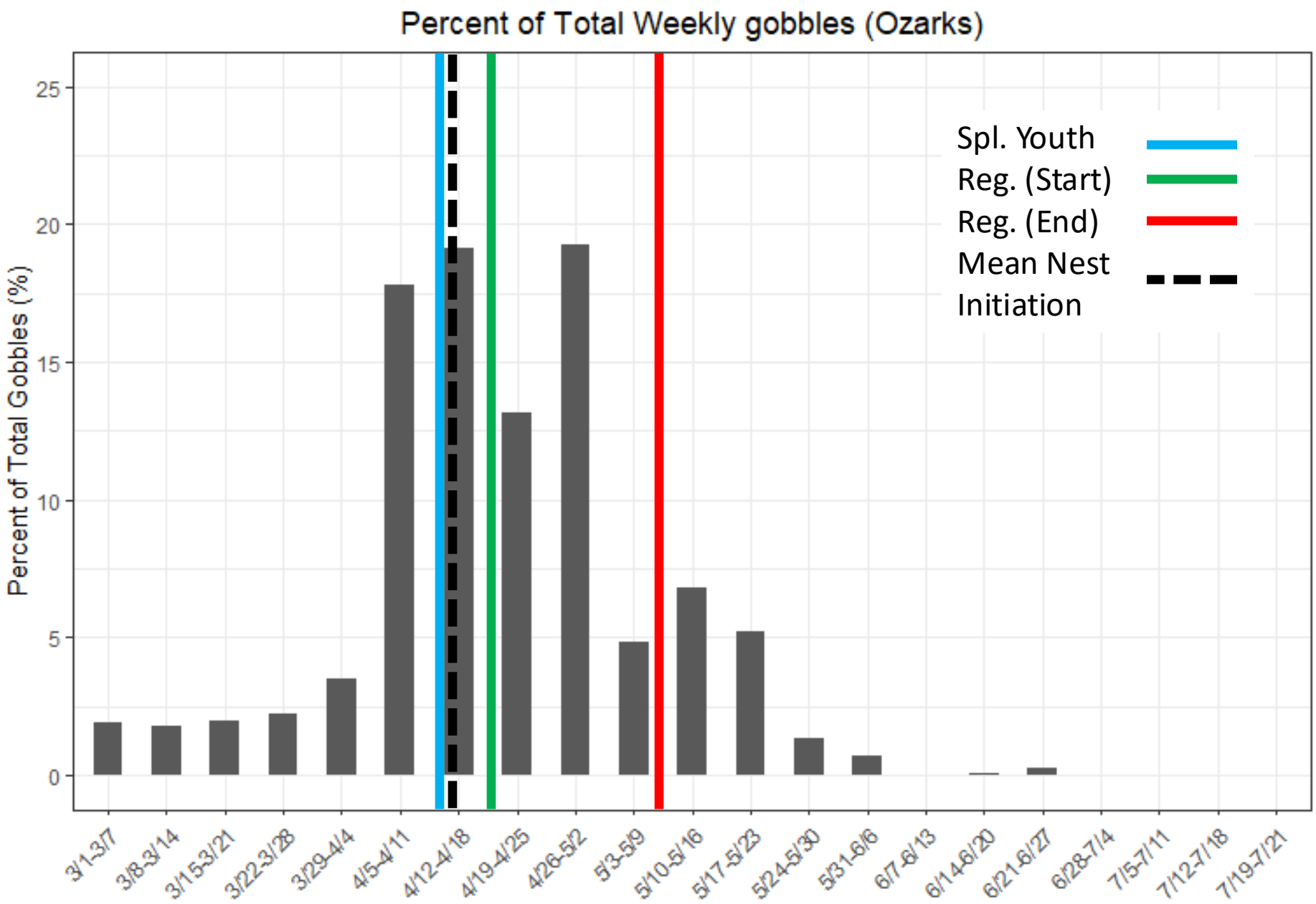
Wild Turkey Gobbling Chronology Monitoring

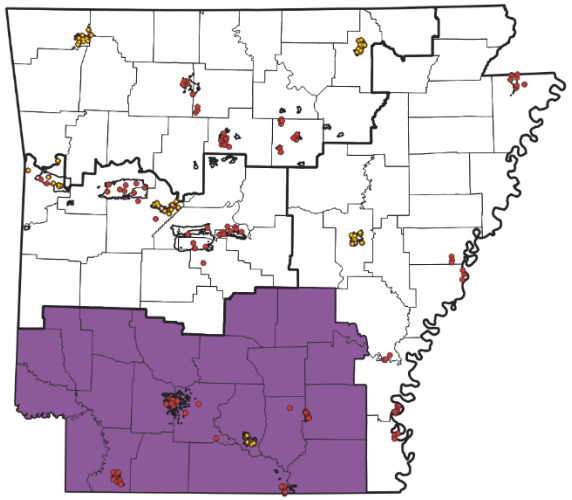


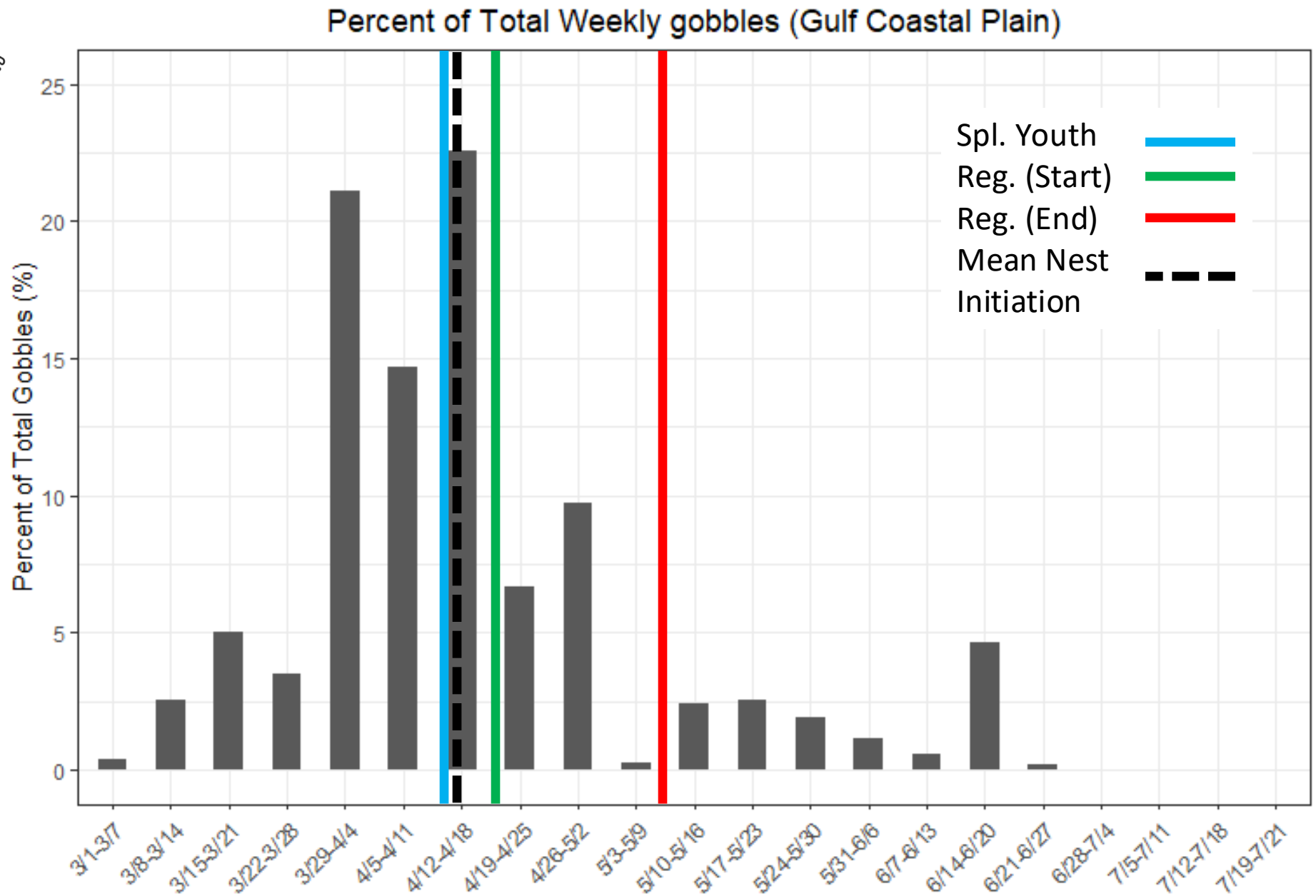
Estimate annual gobbling chronology

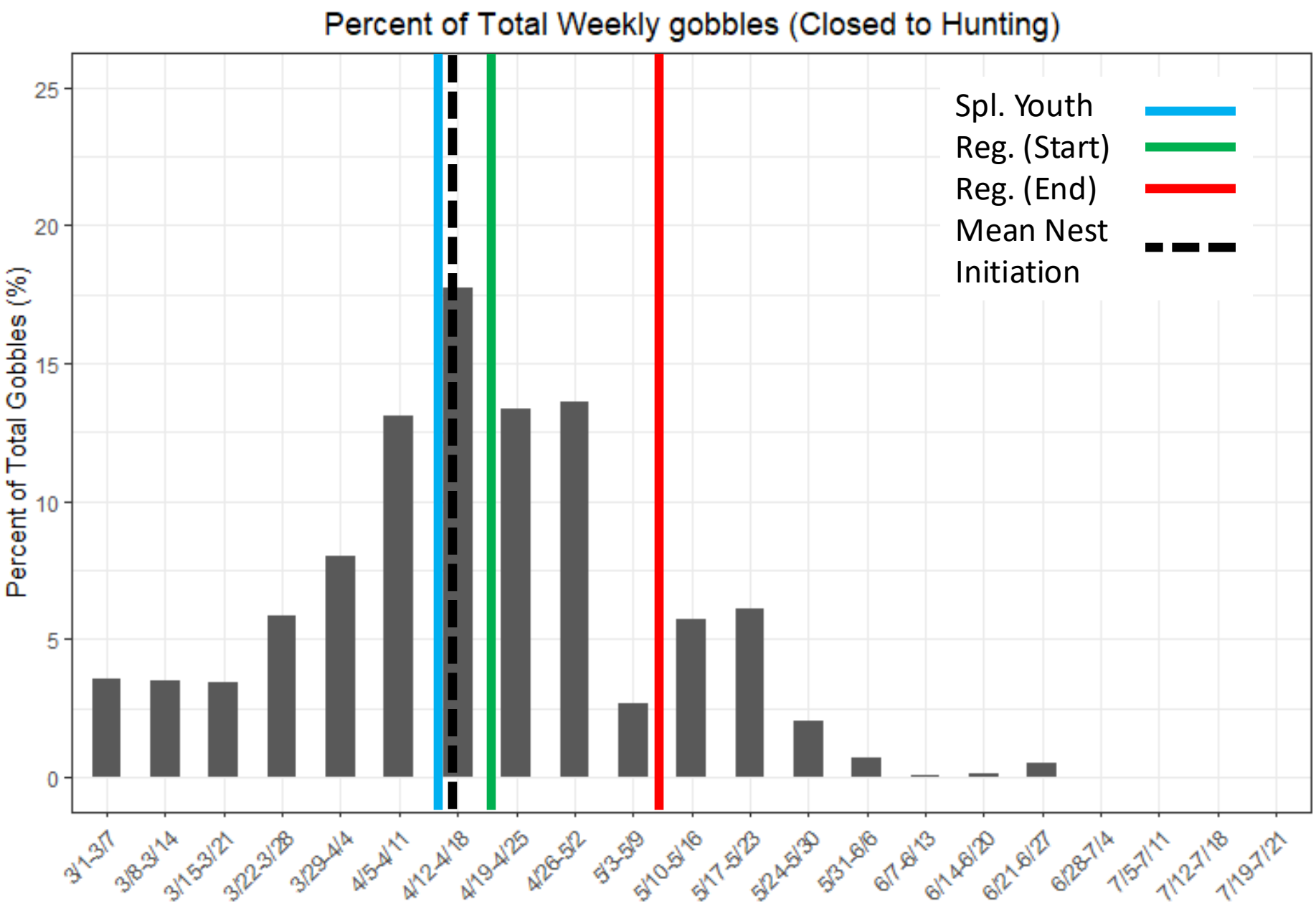
- Harvest-pressure gradient
- 197 ARUs (2024-25)
- March – June

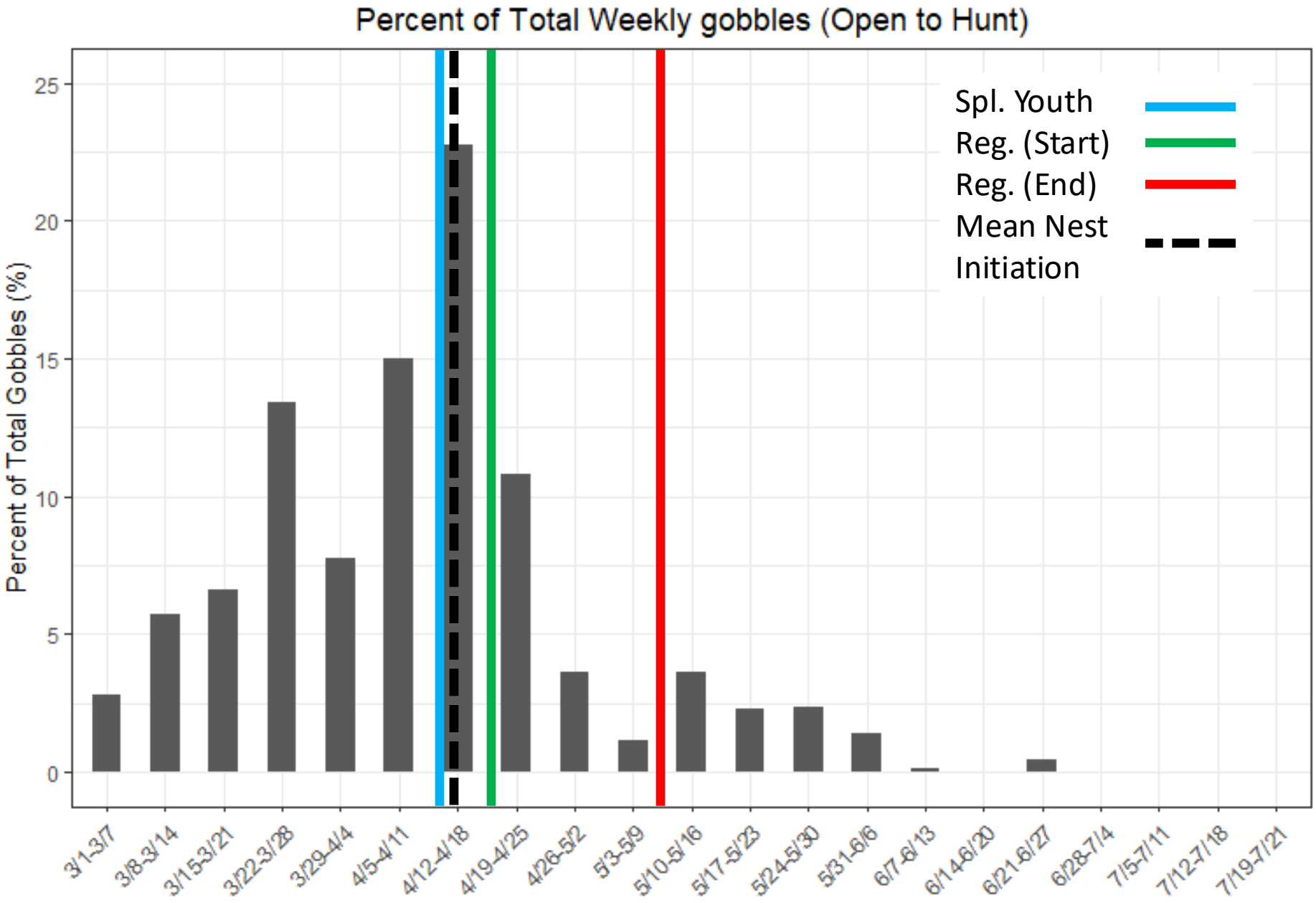


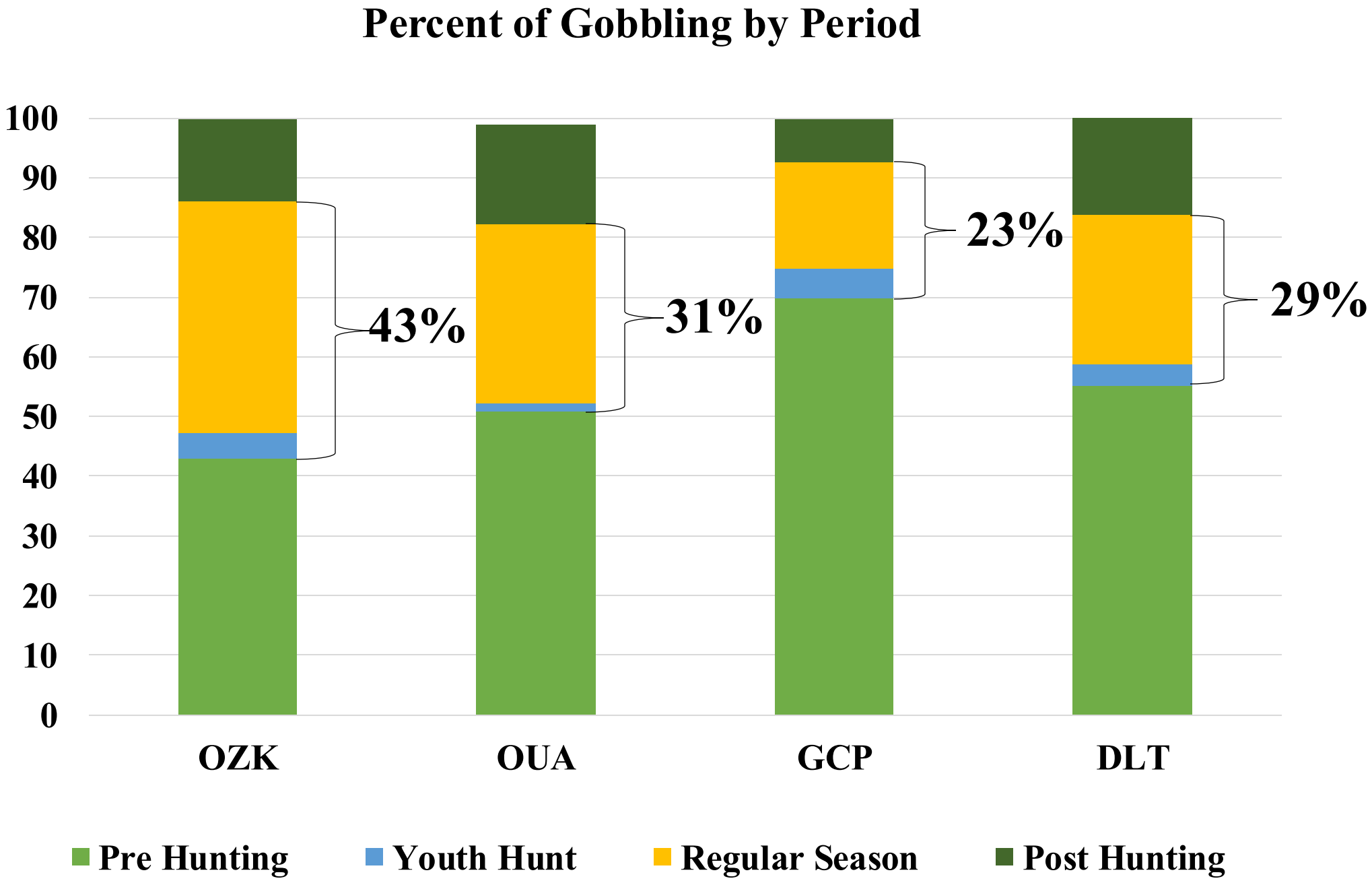

Percent of Total Weekly gobbles (Ozarks)
Percent of Total Gobbles (%)
0
5
10
15
20
25
Spl. Youth
Reg. (Start)
Reg. (End)
Mean Nest Initiation
3/1-3/7
3/8-3/14
3/15-3/21
3/22-3/28
3/29-4/4
4/5-4/11
4/12-4/18
4/19-4/25
4/26-5/2
5/3-5/9
5/10-5/16
5/17-5/23
5/24-5/30
5/31-6/6
6/7-6/13
6/14-6/20
6/21-6/27
6/28-7/4
7/5-7/11
7/12-7/18
7/19-7/21




Percent of Total Weekly gobbles (Gulf Coastal Plain)
Percent of Total Gobbles (%)
0
5
10
15
20
25
Spl. Youth
Reg. (Start)
Reg. (End)
Mean Nest Initiation
3/1-3/7
3/8-3/14
3/15-3/21
3/22-3/28
3/29-4/4
4/5-4/11
4/12-4/18
4/19-4/25
4/26-5/2
5/3-5/9
5/10-5/16
5/17-5/23
5/24-5/30
5/31-6/6
6/7-6/13
6/14-6/20
6/21-6/27
6/28-7/4
7/5-7/11
7/12-7/18
7/19-7/21


Percent of Total Weekly gobbles (Closed to Hunting)
Percent of Total Gobbles (%)
0
5
10
15
20
25
Spl. Youth
Reg. (Start)
Reg. (End)
Mean Nest Initiation
3/1-3/7
3/8-3/14
3/15-3/21
3/22-3/28
3/29-4/4
4/5-4/11
4/12-4/18
4/19-4/25
4/26-5/2
5/3-5/9
5/10-5/16
5/17-5/23
5/24-5/30
5/31-6/6
6/7-6/13
6/14-6/20
6/21-6/27
6/28-7/4
7/5-7/11
7/12-7/18
7/19-7/21


Percent of Total Weekly gobbles (Open to Hunt)
Percent of Total Gobbles (%)
25
20
15
10
5
0
Spl. Youth
Reg. (Start)
Reg. (End)
Mean Nest Initiation
3/1-3/7
3/8-3/14
3/15-3/21
3/22-3/28
3/29-4/4
4/5-4/11
4/12-4/18
4/19-4/25
4/26-5/2
5/3-5/9
5/10-5/16
5/17-5/23
5/24-5/30
5/31-6/6
6/7-6/13
6/14-6/20
6/21-6/27
6/28-7/4
7/5-7/11
7/12-7/18
7/19-7/21


Percent of Gobbling by Period
100
90
80
70
60
50
40
30
20
10
0
43%
31%
23%
29%
OZK
OUA
GCP
DLT
Pre Hunting
Youth Hunt
Regular Season
Post Hunting


Questions